THE GAS JOURNAL

DECEMBER 28, 1932

Vol. 200 84th Year No. 3632

OUR REVIEW

1932

LOOKING back upon the twelve months now drawing to a close, the desire becomes uppermost in mind to wish our friends " A Happier New Year." It is impossible to feel regret at the passing of 1932, for it has been a year during which the problems of unemployment and world finance have incessantly dogged our footsteps. They are, of course, inextricably intermingled. The problem of unemployment must be dealt with; yet the solution has to wait upon world finance. And in respect of world finance, the man in the street must have been reminded ofttimes of the caged squirrel ceaselessly devoting energy to the revolving of a wire drum which, in spite of all his efforts, leaves him just where he was before. Real progress requires something bigger—something broader, and something wider—than even the largest drum. Happy should we have been to be able to record that 1932 had witnessed the advent of this " something."

With world finance as it is, we recognize that it is not sufficient to consider only the financial occurrences that are more or less under our own control, though in the period now reviewed these have been of prime importance. A year ago the abandonment of the Gold Standard by this country was still fresh in mind; people had not yet ceased to wonder at the extraordinary level-headedness with which this financial revolution had been received. Of grave anxiety there was much; of turmoil and of panic there was none. The manner in which the changed conditions came into being formed an encouraging prelude to other important steps towards a firmer financial position. In this connection, special mention must be made of the record War Loan Conversion Scheme carried to a triumphant conclusion by our National Government, which has resulted in the raising of the national credit from a 5% to about a 3½% basis. The work involved in this conversion was prodigious. For example, the task of the Stationery Office printing establishment at Harrow was to produce 15 million forms in twenty-four hours, and on one night the Post Office, in addition to the ordinary mail of the day, must have had to handle several million letters containing these forms. After the printing there remained the problem of the distribution of the tons of printed matter to different despatching depôts, which was carried out by a fleet of fourteen vans, to each of which was given the right of way whenever possible by police officers on duty. Following this there was the folding and placing in each envelope of five separate documents. Not the least remarkable of the altogether remarkable transaction was the absolute secrecy that was observed regarding the intentions of the Government. The result, it hardly need be repeated here, was an astounding success.

The Government prior to this had presented what was termed an " honest " Budget, but one which at the time we felt compelled to regard as a misfortune from the national point of view—for it continued to impose, unlightened in any respect, its overwhelming burden of taxation. The great cause for satisfaction was that it was balanced, with a small surplus; though the fact was recalled later in the year that it contained no provision for war debt payments by this country. Apparently hopes were entertained at that time which did not materialize, and December witnessed the payment by us of millions of pounds in gold, which may be expected to still further influence world finance. During the year clamant calls for economy led to a bewildered state of mind on the part of the public, whose efforts to spare expense were too often made in a wrong direction.

It is to be feared that even municipal gas undertakings have, in certain cases, suffered in this way from misguided zeal. The Gas Industry can only give that perfect service which is rightly expected of it, if both personnel and works be maintained at the highest state of efficiency, and this cannot be achieved by a cheeseparing policy. At the opening of Parliament a few weeks ago, there were passages in the King's Speech dealing emphatically with the problem of unemployment, and it was in connection with this urgent matter that the Prime Minister said: " His Majesty's Government have studied the experience of the past, and they have come to certain conclusions about it. They will encourage every normal expansion of municipal enterprise. Everything that is capable of being turned to good use will be done. But we warn the municipalities and this House that rates and taxes cannot be drawn upon extravagantly." Such expenditure as here invisaged was in mind when writing articles appearing in the " JOURNAL " previously on the subject of remunerative expenditure and the lead given by Mr. Neville Chamberlain to the Gas Industry to pursue its policy of modernization of plant and improvement of process efficiency.

Towards Better Things

WHILE no one will deny that economic and financial conditions have been extraordinarily unsatisfactory during 1932, signs are not absent that better things are in store. The vast Conversion Scheme just alluded to, with its substantial reduction in interest charges, is not the only major financial change that has been brought about. Early in the year the Chancellor of the Exchequer (Mr. Neville Chamberlain) outlined the tariff proposals of the Government. The necessity for a tariff had been recognized by the National Government—or, perhaps one should say, by the majority of the Government. For actually the circumstances in which this far-reaching departure was heralded were unusual in the extreme, the Chancellor being followed by Sir Herbert Samuel, who voiced disapproval of proposals of the Cabinet of which he remained a member. This, of course, became possible owing to an " agreement to differ " scheme that had been brought about. The original basis was a general tariff of 10%, with a short free list, and a contemplated superstructure of higher duties in certain cases. The Dominions were to be immune. There is not space here to follow the subject, but it may be pointed out that the protection accorded to the iron and steel industry has, on the recommendation of the Import Duties Advisory Committee, been extended by a Treasury Order for a period of two years from October—subject, however, to satisfactory progress being made in the preparation of a scheme of re-organization, and in putting the approved scheme into force. To the National Committee for the Iron and Steel Industry was delegated the task of " working out on broad general lines, with such modifications as may be appropriate to the special conditions of particular districts, schemes of re-organization and development which, with the assistance of an adequate scale of tariff protection, may conduce to the restoration of its efficiency and prosperity." Regional Committees were appointed to consider the problems arising in each of the chief producing areas.

The signs of better trade are small as yet, perhaps; but with perseverance they may become sturdy growths. A week or two ago we drew attention to the scheme that has been devised for the manufacture in this country of basic Bessemer steel, and looking around it is noted that, except for February, our output of steel for November was the largest of the year. This must be reflected upon related industries, as the improvement grows. Referring to British overseas trade generally, exports continued to expand in November, when the official returns showed a gain of more than half-a-million pounds on the October figures, which, in their turn, were far more than those for September. The adverse balance between imports and exports for the eleven months was £263,152,868, as compared with £369,632,681 for the corresponding period of 1931.

Our Industry

AND now, what of our own Industry? The year has been marked by activity on the part of the National and Sectional Organizations. Of both national and technical work we will speak later; but it may be emphasized here that the " JOURNAL " volumes for 1932 constitute a permanent record of a very large amount of valuable work—which shows the Industry as a whole to be neither ignorant nor neglectful of what it owes either to the public or to itself, though there is still work to be done before the Service of the Industry is universally all that its well wishers would desire.

We showed a week ago, quoting from the twelfth annual report of the Electricity Commissioners, to March 31 last, that, while the electricity supply industry experienced a growth of nearly 5% on the output of the previous year, the anticipation was that when the detailed figures became available a decline would be found in the sales for power purposes, thus following the experience of the year immediately preceding. This influence of depressed industrial conditions has not extended to the domestic load, which continues to increase, in view of the extent of uncovered field available. The experience of electricity in the power branch must be felt also by gas, and gas is at the same time less favourably situated in the matter of the domestic load, which is by no means so distant from saturation point as is that of electricity. With these facts in mind, we cannot fail to realize to the full the duty that lies before us all.

The Industry and Legislation

THE test of the strength of an industry and of the value of its organization comes when times are bad, and the economic and financial conditions which have prevailed during the past year have applied a strain of unexampled severity. No industry has escaped the ordeal unscathed, but some have fared worse than others, and prominent among those which have suffered least is the Gas Industry. For even if the steady growth and progress which have characterized the past have been in some measure impeded, the Industry has not only been able to hold its own, but to consolidate its position and to prepare itself to take full advantage of the gradual return to more prosperous conditions. In doing so it has had to rely to a great extent upon its own initiative, but it is satisfactory to note that some outside aid in the shape of new legislation has been secured, and that the long-sustained effort to obtain further freedom from unnecessary restrictions promises to bear fruit in the near future.

As the result of representations made on behalf of the Industry, the Gas Undertakings Act, 1932, was introduced in the House of Lords as a Private Member's Bill. In its original form it related only to Company Undertakings. In the month of March, however, the Departmental Committee appointed to consider the recommendations contained in the Second Report of the National Fuel and Power Committee issued an interim report recommending that powers of investment in the capital of other Gas Undertakings and any other Companies carrying on similar operations should be conferred upon undertakers in general. These recommendations were submitted to, and approved by, a Joint Committee of both Houses of Parliament, with the result that when the Gas Undertakings Bill came before the House of Commons its scope was extended on the proposal of the Board of Trade so as to cover Municipal as well as Company Undertakings, and in that form it became law. The powers conferred by the Act are of great importance, especially to larger undertakings, providing effective means of carrying out schemes of rationalization.

Authorization to introduce alternative methods of charge has not yet been obtained, but the Report of the Departmental Committee in that regard has been submitted to the Department, and though not yet published is understood to be favourable to the proposals put forward by the Industry. In these circumstances, and in view of the growing realization that the use of gas for industrial purposes should be encouraged in every way, there is reason to hope that the long overdue amendment of the law in this respect will be secured before long.

Another piece of legislation of importance to the whole Industry was secured during the year by the Kettering Gas Company, with the aid of the National Gas Council. The Kettering Gas Act establishes the principle that a Local Authority is not entitled to impose any restrictions or conditions with respect to the form of heat, light, and power to be used in Council houses, and it has already proved of great benefit to other undertakings threatened with arbitrary restrictions by Local Authorities anxious to force the use of their municipally supplied electricity upon their tenants.

It is a significant fact auguring well for the future that both the Bills above referred to were sympathetically received by Parliament, that they encountered practically no opposition, and that in each case they were passed without a division.

In these circumstances the Department charged with protecting and furthering the interests of the Gas Industry, being supported on the one hand by the strong recommendations of the various independent Committees which have examined the case for new gas legislation,

and assured on the other of a sympathetic hearing from Parliament, need surely have no further hesitation in submitting a Bill according those other powers which are so urgently required by the Industry both in their own and in the national interest.

To Departmental doubts and difficulties must also be attributed the partial stultification of the Special Order procedure which occurred in the case of the Bath Gas Company's Special Order. The Company being about to take over certain neighbouring undertakings decided, in agreement with the Bath Corporation and others concerned, at the same time to constitute themselves a Basic Price Company, and in accordance with precedent promoted a Special Order on the multiple basic price system. The Order was objected to by the Board of Trade, who submitted it to the House of Lords with a single basic price, a course of action in which they further persisted although a Select Committee of the House to which the matter was referred as a result of protests by the Bath Corporation acting on behalf of the consumers had decided in favour of the multiple basic price system. In the end the multiple basic price system triumphed, the Order being passed in its original form, but not before a very large amount both of time and money had been unnecessarily expended. In the meantime, a Joint Committee of both Houses of Parliament set up for the purpose has considered the general principle involved.

The year has also seen the passage of a good deal of other legislation liable to affect the Industry. The continuance of the operation of Part I. of the Coal Mines Act, having regard to the past, naturally roused fears of increased charges for coal for public utility purposes, and representations which laid stress on the great danger of any increase in view of the very severe competition to which both gas and coal were being subjected by the heavy importation of oil at a low price, were made to the Ministry of Mines. Fortunately, the schemes put in operation in accordance with the provisions of the Act have not functioned entirely in the manner intended by their authors, so that the resultant damage has been less than anticipated.

In the case both of the Town and Country Planning Act and of the London Passenger Transport Bill at present before Parliament objections put forward on behalf of the Industry have been satisfactorily met by the Government.

A Live Policy

Turning to the efforts which have been made by the Industry from within to hold the ground which has been gained, to break fresh ground, and to prepare for a vigorous offensive when the clouds of depression begin to lift, it is to be noted that the movement for the development of large scale gas supply for commercial and industrial purposes has steadily gained momentum. The number of demonstration showrooms established in various industrial centres has increased, and in order that the needs of manufacturers may be more clearly gauged and satisfactorily met arrangements have been made in many places for the visits of experts to factories and workshops in order that special requirements may be studied under working conditions.

Knowledge and experience required in one centre in regard to special gas fired appliances have been communicated to others, and there is a growing appreciation not only of the magnitude of the need to be met, but also of the methods of doing so. Probably the most striking of the developments at present under consideration is that designed to use compressed gas for motor vehicles. Most of the initial difficulties have been overcome, and in several places 'buses and other heavy vehicles hitherto petrol driven are running satisfactorily and more economically on gas. The prospects thus being opened up are obviously of the greatest importance to a great variety of interests.

The policy of encouraging amalgamation has also been steadily pursued, and several important mergers have been effected during the year. There is, however, no doubt that a good deal still remains to be done in this respect, and it is most important in the interests both of individual undertakings and of the Industry as a whole that where circumstances and conditions indicate the desirability of fusion or of joint working arrangements, local prejudices and vested interests should not be allowed to stand in the way. Reorganization of industry is the order of the day, and no method of securing better and cheaper service for consumers must be overlooked.

The President of the National Gas Council pointed out in the course of his speech at the Annual Meeting of the Council in May that the Gas Industry has been able, through the medium of its National Bodies, to get rid of many of the disadvantages of the individualism engendered by existing legislation and to utilize its best elements for the common good, and it is obvious that all remaining disadvantages should be got rid of as soon as possible.

Nor is it only through the instrumentality of the National Bodies that co-operation has been secured, for the policy of acting in conjunction with other bodies such as the Conjoint Conference of Public Utility Associations and the Federation of British Industries in matters of mutual interest has been continued. In this way it has been possible to make representations to, and negotiate with, Government Departments and Local Authorities with the added weight afforded by a combination of important industries having interests in common, and in consequence satisfactory results have been obtained in various directions.

As has been already remarked, signs are not wanting that the depression which has prevailed so long is beginning to lift, and a resumption of industrial activity will find the Gas Industry well equipped in all respects and ready and able to take full advantage of the opportunities which will then be offered.

Closer Co-operation

Turning now to the technical progress of our Industry during the past twelve months, our first and lasting impression is the increased co-operation between the Industry as a national organization, individual gas undertakings, manufacturers of plant and appliances, and investigators in other spheres whose work has a direct bearing on the problems which the Industry has to face and solve. There can be no doubt that progress in all directions—the result of an enlightened policy of arriving at facts by paying closer attention to experimental methods and their rapid application—is being accelerated. The year has shown that new fields exist to be conquered; new developments indicate the enormous possibilities of gas in the home, in public service, and in industry.

Continuous Verticals

During 1932 much discussion centred round the supply of a standard gas throughout the country. The declared calorific values for the vast majority of undertakings and the great bulk of gas supplied lie between 450 and 500 B.Th.U., and the single value which claims the greatest number of undertakings and the greatest bulk of gas is 500 B.Th.U. Fifty per cent. of the supply by the important provincial undertakings ranges from 470 to 480 B.Th.U. These figures demonstrate the influence of water gas dilution and the flexibility which gas undertakings enjoy in supplying gas at a calorific value best suited to their distribution systems; and in this connection the continuous vertical retort is playing an important rôle. We have had some valuable information on the production of water gas by steaming in the modern vertical retort, and the important point has been emphasized that for every increment of water gas dilution by steaming there is an optimum throughput of coal. To neglect this consideration is to reduce the efficiency of working. Optimum throughput of coal in relation to the amount of steam admitted to the retort should be the aim of the carbonizer; and results have shown that, from the point of view of gas-making, steaming under correct conditions represents an astonishingly true chemical reaction in which high efficiency can be obtained

in ordinary practice at any stage in the process at which it is desired to stop.

In this country the regenerative system of firing continuous vertical retorts has not been employed, but we have from France comparative results of regenerative and recuperative settings in operation at the same works. The regenerative setting is heated by clean cooled producer gas, and the throughput is relatively high. The fuel consumption is much less than that of the recuperative setting; on the other hand, waste-heat boilers cannot be employed in conjunction with the former, owing to the low temperature of the waste gases. The gas yield (500 B.Th.U. per c.ft.) is about 3½ therms per ton of coal more for the regenerative setting than for the recuperative setting. Further advantages of the regenerative setting are the greater ease of regulation, the greater uniformity of temperature, and steadier working. Nevertheless, each type of setting has its own special advantages.

For the small works, a modified type of continuous vertical plant has been introduced and installed which, while retaining vertical flue construction, employs upward instead of downward heating. It is claimed that this modification, particularly when carbonizing highly swelling coals, leads to perfect coal travel, less scurf formation, and better steaming conditions. With a view to reducing maintenance costs, on the upwardly-heated retorts the temperature in the vertical combustion flues is sufficiently reduced at the point where erosion of the silica material normally takes place to allow the retorts at this level to be constructed in firebrick. It is claimed that by the time the coal has travelled past this belt of firebrick it has acquired sufficient heat to avoid the extreme differences in temperature on either side of the retort wall which is the main cause of erosion of silica material at this point.

Horizontals and Intermittent Chambers

In view of what we have said about the flexibility of the continuous vertical retort, it is interesting to turn to the results of two investigations carried out by the Fuel Research Board, and published during the year. The horizontal setting at the Fuel Research Station is of normal design for a throughput of 10 tons of coal a day (combustion chamber temperature 1350° C.), except that arrangements were made for using water gas for heating when it was required to have precise measurements of the fuel used. A method has been adopted at the Station whereby, by increasing the volume of flue gases, the throughput could be increased from the normal 10 tons of coal a day without raising the combustion. Using producer gas from the built-in producer, and increasing the volume of hot flue gas, a throughput of nearly 17 tons has been attained, and it does not yet appear that the limit of the setting has been reached. This remarkable increase in flexibility is to our mind even more important than the reduction in capital costs and ground space resulting from the increased throughput.

Intermittent vertical chamber ovens are now firmly established as a highly efficient system of carbonization; 1932 has added greatly to our precise knowledge of their working, and has witnessed the installation on a small works of a type of intermittent chamber oven plant new to this country.

Coke Ovens

In regard to coke ovens, the event of the year, as it concerns the Gas Industry, was the inauguration by the Prince of Wales of a £1,000,000 battery at the Beckton Works of the Gas Light and Coke Company. The visit of the Prince was yet another example of the sympathetic interest taken by the Royal Family in a great and growing British Industry. Almost as a matter of routine a new carbonizing unit possessing many unusual features has been brought into operation capable of producing every day from 1200 tons of coal 15 million c.ft. of gas, which represents only a small proportion of the daily output of the Beckton Works; and the lay-out of the plant will permit the extension of the installation to four times its present capacity. And the Gas Industry is thought by some to be dying!

A remarkable piece of engineering and fuel technology was brought into operation at the Normanby Park Works of Messrs. John Lysaght, Ltd.—an installation of modern coke ovens, blast furnaces, and steel plant which, by an excellently planned scheme of co-ordination, conserves fuel and by increased efficiency throughout lowers the cost of production of the finished steel. In this plant, the first of its kind in this country, the only coal necessary for the entire work is that charged into the coke ovens, it being now possible to convert all the iron manufactured into steel, and roll it in the mills, without the use of any extra solid fuel. One ton of steel, including the pig iron for its manufacture, can be produced and rolled by the use of approximately 30 cwt. of coal. The whole plant represents a marked advance in the science and practice of fuel utilization.

Two Carbonizing Questions

Two topics of considerable interest in the technique of carbonization have been discussed in our columns during the year. One concerns the blending of coals; and it has been shown that great care has to be exercised not only in blending coals from different seams, but in preparing for carbonization the coal—or mixture of coal—from a single seam. With blending, two and two do not necessarily make four. The quality of the coke produced cannot be determined by any knowledge we can gain of the constituents of the blend. Difficulty is experienced in relation to the fusion point of the ash from blends. It has been found in a number of cases that the fusion point of the ash produced from a blend of coal may be higher or lower than that of the constituents.

The other question is the carbonization of wet coal in horizontal retorts, intermittent chambers, or coke ovens, with a view to reducing the free carbon content of the tar produced. On the face of it, it seems absurd, but when one regards a retort setting as only one link of the chain of gas-works plant, quite a new light is thrown on the subject. The steam evolved in the early stages of carbonization assists in the evolution of gas from the coal, and the heat taken up by the steam results in a lower temperature of the crude gas in the hydraulic main. With modern practice the condensing plant is not wholly concerned in condensing steam produced in the retort; it also has to condense the water vapour picked up by the hot gas from the spray of ammoniacal liquor in the main. The amount of this water vapour absorbed is a function of the temperature of the gas—the higher the temperature the more water vapour taken up. And it is quite conceivable that the lower temperature of the gas, due to carbonizing wet coal, may so affect the absorption that, when the gas from a wet coal reaches the condensers, the water content may be less than that of a gas made from dry coal. In a horizontal installation, water has to be added to the ammonia washer, so that here again carbonization of wet coal cannot be said to affect adversely ammonia recovery. Finally, there is the fact that carbonization of wet coal does not necessarily imply reduced throughput of the installation. All this, of course, is subject to the qualification that the amount of water added does not exceed an optimum value.

C.W.G. and Coke

The back-run process for the manufacture of carburetted water gas has been the subject of a searching investigation, and we have been given a guide as to which process—the back-run or the down-run—to adopt. For gas of 400 B.Th.U. calorific value, the back-run shows to advantage; for gas of 500 B.Th.U. the down-run has more to recommend it.

Coke service has improved in many places during the past twelve months, but we have still a long way to travel before we approach a good general supply. As

yet, few undertakings have made it a point to sell coke of constant quality, nor has enough attention been paid to the ash content of coal.- There is plenty of evidence that high-temperature cokes are superior to other solid fuels from the standpoint of radiant efficiency in the open firegrate, but this superiority goes by the board if the coke is supplied wet and has an objectionable ash content. Ash creates dust, detracts from the appearance of the open fire, and may act as a screen to the free radiation of heat. In this last respect, it has been pointed out that proximate analysis is of little service, for it does not indicate the nature of the ash, which may be fine and floury or heavy and granular. Apart from the open fire, where the presence of large quantities of ash is the most obviously annoying, a high-ash coke may render it difficult to keep the smaller coke boilers alight throughout the night. As to moisture, it is not pleasant for the housewife to see the sitting-room carpet, and also the chairs, covered with small pieces of hot coke.

New Lights on Benzole Recovery

A MARKED advance has been made in the recovery of benzole from coal gas, and it has been proved that it is a paying proposition for most undertakings, large or small. Benzole is a new consumer which entails no charges on account of maintenance of mains, services, meters, or appliances, and no losses by leakage or inaccurate registration. It has been described as " the gas engineer's dream of an ideal consumer." As to the national aspect, if benzole recovery could become general in the Industry it would be responsible for the permanent employment of about 6000 miners. Further advantages of benzole recovery have been emphasized. Among these are the complete removal of naphthalene from the gas which is sent out on to the district, and all that this entails in expense and goodwill; the reduction in the sulphur content of the gas; the partial elimination from the gas of gum-forming constituents; and the virtue of the process as an aid to maintenance of a straight-line calorific value chart of the gas leaving the works.

A new inhibitor system to prevent gum formation in benzoles on storage—a system for which there is undoubtedly a great future—has been described. Until very recently it has been stipulated that the unsaturated hydrocarbons must be removed by acid washing for the final benzole to conform to the Specification of the National Benzole Association. The loss occasioned by acid washing is serious, and it may amount to anything up to 15% of the crude benzole recovered. It has also been shown to be an unnecessary waste, for the unsaturated hydrocarbons, provided they do not form gum, are a good fuel for motor vehicles. Certain bodies have the property of inhibiting gum formation by the unsaturated hydrocarbons, and only a very small quantity of the inhibitor—say, 1 part in 10,000—is needed. Such inhibitors are tricresyl and pyrogallol. The exact method by which these inhibitors accomplish the suppression of the gum is not known, but they have been successfully applied on a large scale during the past three years. The new Specification of the N.B.A. permits the adoption of the inhibiting process, thereby eliminating the loss caused by the acid-washing process. The new system is simple. All one has to do is to remove the traces of pyridine by a weak acid wash, and remove the traces of phenols, distil the benzole to the N.B.A. Specification, and add the inhibitor. The process has been patented by the N.B.A.

A new internationally-agreed oxidation test for benzoles has been described in our columns, as also has a new apparatus for determining the sulphur content of benzoles.

Help for the District

IT has been pointed out that there are two distinct types of gum which may be formed in town gas. The first type is liquid phase gum, apparently formed by the polymerization and oxidation of unsaturated hydrocarbons, primarily styrene and indene; the low-boiling unsaturated hydrocarbons such as cyclopentadiene and butadiene are not important factors. The rate of gum formation, which is the result essentially of oxidation, is greatly increased with an increase of oxygen in the gas, and is enormously increased by the presence of small quantities of sulphur compounds of the mercaptan type, which act as catalysts. Conversely, gum formation can be inhibited by anti-oxidants such as pyrogallol. The obvious remedy, then, is to remove from the gas such an amount of styrene and indene that a negligible quantity will be deposited in the distribution system, and this can be accomplished by oil washing, among other methods. A process has been developed for the removal of the mercaptans, but this is as yet too expensive for general use. Experiments are in progress on a process which will combine the removal of a certain amount of gum-forming hydrocarbons and all the mercaptans.

The other type of gum is vapour phase gum, which presents an entirely different problem. This gum is dispersed in the gas in the form of very fine particles, and its formation is due to the reaction of several hydrocarbons with oxides of nitrogen. The major source of the latter is the oxides of nitrogen in the products of combustion in the settings surrounding the retorts. Here again the obvious remedy is to remove the oxides of nitrogen from the gas; and a large-scale plant has been developed for this purpose, where from 4,500,000 to 7,000,000 c.ft. of gas is treated per day. Tests made on the gas at the outlet of the plant indicate that the gases thus freed from oxides of nitrogen will not form gum.

Hydrogenation of Tars

THE possibilities of the use of tar oils and powdered coal mixtures have been considered, but while gas-works tar and tar products are satisfactory fuels, at present they cannot compete with low-priced petroleum fuel oils. It is simply a question of price. Sales of fuel oil at as low a figure as 22s. a ton are on record; and there are many more remunerative markets for tar. To-day about 850,000 tons of tar a year are used for road making and surfacing, and if the prejudice against tar is removed—and we think it will be broken down—there is an available outlet for a further 350,000 tons, this figure representing the quantity of imported bitumen used for the same purpose. The greater utilization of tar for road purposes, thereby avoiding the production of unmarketable products (creosote), is to be looked for; and apart from this there is the conversion of the unsaleable products formed in the manufacture of pitch and special products into products capable of competing in unsaturated markets. Also there is the possibility of using tar oil as a fuel for high-speed Diesel engines. It has been demonstrated that the addition of dopes to tar oil is definitely attractive. Dopes such as ethyl nitrate have been tried which, when added in proportions varying from 1 to 5%, give very satisfactory engine performance. At present the amount of dope added is such that it increases the cost of the tar oil by about 1d. per gallon, and this figure is too high. The use of dope is comparatively new, and it seems possible that cheaper materials may be found; the finding of a cheap material as satisfactory in its action as ethyl nitrate would undoubtedly be of importance.

Apart from hydrogenation of tars into motor spirit, there are other aspects of hydrogenation to which reference has been made in our columns. Among these is the production of toluene from tar acids or from the cresol fraction of tar acids. None of these processes is likely to utilize a large quantity of tar; nevertheless each is of interest to the Industry in that collectively they can improve the tar market. A number of other outlets of this type have emerged—synthetic resins, from tar phenols; wetting-out agents, from phenols; and " resinoids " as a suitable base for paints, stains, or lacquers.

A simple and efficient process has been put into operation for the manufacture of concentrated gas liquor, and experiments have been undertaken on the uses of ammonium bicarbonate.

A happy feature of the year is that increased financial

support has made it possible to extend present investigations in refractory materials for the Gas Industry and to put in hand additional researches which have been held back owing to lack of funds.

Industrial Developments

RIGHTLY, a great deal of attention has been devoted during the year to the application of gas to industrial processes. Of the many developments to promote industrial gas sales, none can be more important than the institution of central organizations to serve definite districts in the country. Such organizations include an industrial laboratory, adequately equipped and with a competent technical staff. The smaller undertakings could not afford to inaugurate on their own account laboratories of the nature required to explore the industrial use of gas and to apply research to the modification of existing equipment or the development of entirely new gas using apparatus. Now, however, by subscribing to the central organization of their district they can obtain results which will be of immediate service to them, and they will doubtless find that their expenditure in this direction will be amply repaid not only to their individual benefit but to the benefit of the Industry as a whole. The central laboratories act as demonstration showrooms; and the practical advantages of actually demonstrating to the industrialist the application of gas cannot be over-stressed. In no single instance has the institution of such demonstration premises proved a failure.

It has been stressed that gas will not progress rapidly unless the outlook in price fixing is the price at which the load can be obtained, rather than the attitude " Our industrial rate is ' x '; if ' x ' does not fit the equation, we are sorry." It does not need a genius to say that the Gas Industry must pay its way, and that the industrial load must be a business proposition; but it does need courage and foresight to establish a price based on conditions *plus* a new load, rather than on conditions as they exist without that added consumption. It has also been stressed that, if gas is to take its true place in the industrial and manufacturing world, and prove its real qualities, it must be supported by an efficient service—an organization which will periodically inspect and maintain in good condition its past installations with a view to further improvements and the complete satisfaction of the consumer.

One of the outstanding investigations of the year has been on the use of gas at high pressures for motor transport. The prospects of this field for gas are bright. Nor is there reason why the used of bottled gas should be confined to the propulsion of motor vehicles. It may be of considerable use, in connection with incubators, in districts where a gas supply is not available from the mains, and also for ordinary domestic purposes. It may find an outlet on yachts. Compressed gas does in fact open up new vistas of gas service.

Domestic Heating

A NOTABLE contribution has been made to the study of the conditions governing the ventilation induced by gas fires fitted to flues. Precise information is now available on a subject on which the success of gaseous heating depends. The main factors are cross-sectional area of the flue, heat input, and height of flue. It has been pointed out that considerable structural economies are rendered possible by the use of gas fire flues of small cross-sectional area compared with the minimum sizes possible with solid fuel fires, and that the air movement produced by these small flues is greatly in excess of that required to remove the products of combustion from the fire. It is no use building large flues and then blocking them up and so reducing the ventilation because there is an excessive draught; we may as well effect economies in the actual construction. The builder now is given guidance as to the size of the flue he should use to produce normal ventilation.

The inset type of gas fire designed to be fitted into an existing opening and having no canopy of its own is becoming increasingly popular. Doubts have been expressed as to the capabilities of such fires to direct their products up the chimney. Tests have shown, however, that the behaviour of inset fires is much more reliable in this respect than has been supposed, and that the controlling feature is the height rather than the projection of the canopy or lintel. Provided this height does not greatly exceed 2 ft. above floor level, a flue which is capable of inducing physiologically acceptable ventilation will be found capable of removing all the products of combustion from the normal types of inset fire.

Great interest has been displayed in convection heating. We know a great deal more about combustion and its products than we did, and this knowledge is having its result in the marketing of warm air appliances —convection heaters—of various types and sizes, one of the most interesting being the unit heater, which has met with ready acceptance in the United States. Certainly the past twelve months has witnessed unusually rapid advance in the design of both radiant and convective gas heaters. An interesting appliance which we have brought to the notice of our readers is a radiation-*cum*-convection heater. The most startling feature of the appliance lies in the disposition of the radiants, which are inclined forwards away from the base. It is claimed that this does not impair the radiant efficiency, and we are told that the temperature of the radiants is higher than is normally the case with vertical radiants.

The Spirit of Progress

A MOST important contribution has been made on the conversion of the potential energy of coal gas into radiant energy, and we have heard about the development of fires employing screens of translucent silica. Attention, too, has been paid to air conditioning by gas; and the prospects of a future load for large blocks of flats and offices, and for public buildings and theatres, are bright. Where new buildings of this type are contemplated sight should not be lost of the possibilities of applying gas to air-conditioning, for the capital expense of a gas-operated plant would be a very small item in the total for the large building it would serve. The prospects are still brighter when we turn to the heating of factory premises where special operations are carried out, where the maintenance of definite atmospheric conditions is essential to success.

A gratifying feature of the year is the attention which has been given to gas lighting, both domestic and street; and in connection with the latter phase of the lighting load a most valuable paper has been presented which will be of service to all who are engaged in the illumination of public thoroughfares. Another gratifying feature is the interest displayed in office organization, in which regard we have had several highly useful accounts of systems of mechanical costing and billing.

A feature not so gratifying is the seeming lack of enthusiasm for the refrigeration load; but there has been plenty of active and effective salesmanship in regard to water heating, particularly to thermostatically controlled storage types of appliance, and in regard to central heating, while the greater adoption of bright enamel finishes to gas apparatus generally is a noteworthy step in the right direction.

At the close of the year we may well say that everything points to an increasing interest in new developments. The spirit of progress is in the Industry.

Coal

COMPARED with some of its predecessors the past year has not brought quite so much anxiety with regard to coal supplies. Nevertheless it has not been uneventful.

In June last Parliament confirmed for five years Part I. (relating to Selling and Production) of the Coal Mines Act of 1930, and the system of minimum prices and quotas is thereby established until Dec. 31, 1937, unless rescinded by Parliament before this date. At the same time the 7½-hour day for underground workers was also

confirmed, and is to remain in force until there is international agreement on the matter.

The miners sought to obtain Parliamentary security from any reduction in wages during this period, but the owners were unwilling to agree to this. After several meetings between Ministers and the representatives of owners and men, however, it was eventually agreed by the employers to maintain the existing rates for another year, and this matter will therefore have to come up again for consideration next summer.

The continuation of the scheme for minimum prices and quotas for another five years cannot be contemplated with any satisfaction by the Gas Industry. This subject has been discussed so many times that it is unnecessary to make considerable reference to it in a survey of this kind, but it cannot be too strongly insisted that the purpose of this scheme is to call upon public utility undertakings, railways, and domestic consumers in this country to subsidize the coal industry for another five years. Experience of the operation of this section of the 1930 Act has provided ample confirmation of the criticism which has been directed against it in these columns, and the recent correspondence in " The Times " indicates that these views are shared by many coalowners, for the scheme has defects which are inherent in all such systems. It allows of bureaucratic control under Parliamentary sanction of the supply and price of an essential raw material; it allows of quotas of production being granted to efficient and inefficient mines and permits the establishment of minimum price schedules so that these inefficient mines may continue to operate, thereby raising the average cost of production; further, it cannot prevent evasions to the detriment of the home consumer while cheaper coal is sold to the foreigner.

It is said by its supporters that the only alternative is cut-throat competition and the " survival of the fittest," but, however much this may be deplored, it is, unfortunately, one of the laws of Nature, as well as of industry; and even if it is justifiable to give temporary Parliamentary protection to an industry of national importance during a period of world-wide depression, in our opinion it is indefensible to do so on the lines of this Act.

Sections of the coal industry are, however, still not satisfied, and it appears that there is some prospect of more legislation next year which may result in further increases in minimum prices in some of the districts, so as to allow others to compete in certain home markets, and the imposition of a levy on the home trade for the purpose of subsidizing exports. It will be necessary for the Gas Industry to watch carefully these proposals, or it may be called upon to bear further burdens.

Turning to general conditions, although quota restrictions have occasionally caused inconvenience, there has, on the whole, been a satisfactory supply of suitable coal to the Gas Industry, and it is pleasant to record that there has also been a general improvement in cleaning. Unfortunately, however, despite the protection and assistance which the coal industry has received, the demand has continued to fall, and this year will probably show the lowest output for any normal year since 1898. Last year we exported, or shipped as bunkers for foreign going vessels, $26\frac{3}{4}$ million tons less than the average for the five years before the war, and the home trade consumed $19\frac{1}{2}$ million tons less.

The causes of the losses incurred by the export trade are fairly well known, and it is to be feared some of these may remain permanently. Last year the depreciation in sterling seemed to offer some prospect of an increased competitive power for our coal abroad, but this was very soon countered by restrictions on the importation of foreign coal into France, Germany, and other countries.

The deplorable condition of our own industries is, of course, largely responsible for the heavy fall in home consumption, and the increase in price to the home consumer under the Coal Mines Act of 1930 has no doubt caused many of them to look elsewhere for cheaper and more efficient sources of power. It is significant that one of the railways who, like ourselves, are among the sufferers, have recently carried out very successful experiments with Diesel-electric traction, which has proved to be much more economical than coal fired locomotives.

One frequently sees statements made by coalowners to the effect that the miners have made themselves so difficult since the war that they have driven foreign customers to seek other sources of supply. It will be well for the colliery owners to consider the implication of this moral when they are making decisions with regard to the prices to be charged for coal to the home consumer.

The greater security given to the home trade by the tariff measures of the National Government and the restrictions on the importation of manufactured goods may stimulate demand from the heavy and light industries of this country, and there has undoubtedly been more activity in this direction during the last two months. It is, however, recognized that the vital necessity for their revival, as well as that of the coal industry, is a general improvement and more settled conditions abroad. From " China to Peru " the world is in turmoil—socially, politically, and financially—and until these disturbances disappear industry cannot wholly recover. Even then, unless some striking development takes place for further utilizing the manifold possibilities of coal, it is doubtful whether the potential annual output of 300 million tons will ever be achieved, and some authorities state that the country will have to accept a stabilized annual output of 50 to 60 million tons less than this figure.

It will be unfortunate if this defeatist attitude is adopted as our national outlook for coal. If the world and our home industries do not want this material in the form in which it has hitherto been offered to them, it seems to us to be an infinitely better policy and much more in accord with our national spirit not to accept defeat and retreat, but to take steps to consider the problem on other lines.

The marketing of our coal has hitherto not been satisfactory, but this is getting better and can still further be improved; the preparation of standard specifications for the sampling and analysis of coal and coke by the British Standards Institution will be of great assistance in this matter. The preparation of coal for the market is also definitely improving. According to the last annual report of H.M. Inspector of Mines, in 1931 the proportion of the total output which was treated by wet and dry cleaning processes was 30%, compared with 20% in 1927. This is all to the good, for not only is the consumer enabled to get cleaner coal, but from the greatly increased demand for " sized " coal (while other forms frequently show decreases) it is obvious that if the changed requirements of the customer are closely studied, demand can be stimulated. We would go further and suggest that the problem of placing coal on the market freed from all extraneous ash should be tackled strenuously by collieries, and that this, together with the withdrawal of all protection from old and inefficient mines offers the readiest method of recovering our markets.

Meanwhile we urge the necessity of research and still more research, so that as soon as possible it may be economical and obvious to all that the use of raw coal should be abandoned.

Bye-Products

" THE total nitrogen producing capacity in the world at the present time is estimated to be about 3,400,000 tons of nitrogen, exclusive of Chile. The ' manufactured nitrogen ' industry of the world thus operated at an average of about 42% of capacity." This extract from the annual report of the Sulphate of Ammonia Federation sums up the position of the sulphate of ammonia industry, and accounts for its present position. Prices have been lower than ever, and what these would have been had not the Federation been strong enough to negotiate with producers anxious to realize stocks at almost any price, can only be surmised. The production of bye-product sulphate in Great Britain has decreased to approximately 60% since 1929-30, partly through diminished coke oven production, but also through the smaller gas-works discarding the ammonia. These small makers have obtained little assistance from reduced acid

prices, in spite of the fact that their spent oxide—the raw material for acid production—is almost unsaleable. The solution of the gas liquor position for the smaller producers is undoubtedly in the direction of concentration of the liquor, and disposal to central works producing their own acid from their own raw materials. It has been demonstrated that this system can produce sulphate at as low prices as the large synthetic makers.

In spite of the excessive world plant capacity, synthetic ammonia plants are still being erected—Japan, among other nations, proposing to make herself independent of imports. This increase is to take place in spite of a decrease of nearly 4% in the world consumption of nitrogen, and the only hope of the nitrogen industry lies in the understanding recently arrived at between the most important nitrogen producers in Europe, co-operation with the Chile nitrate industry having also been secured. These agreements have already resulted in small price-increases being arrived at for the coming year. It is to be hoped that these arrangements may become permanent so that output may be brought into relation to consumption.

The chief features of the tar products market have been in direct contrast to the ammonia markets. Reduced world production of tar through reduction of the coke oven output varying from 50% of normal output generally in Europe to something approaching 25% of normal in America has led to a shortage of the more important tar products, with the exception of creosote. Pitch has now reached a price at which users are beginning to look around for substitutes. Crystal carbolic continues to be an improving market, but cresylic still remains in plentiful supply, while pyridine bases have not yet recovered from the excessive price reached some years ago, when substitutes were found for this material. These substitutes have proved more effective and cheaper, and pyridine bases are not likely ever to regain their position as regards denaturing of alcohol in some of the former markets. The reduced production of creosote has not yet affected the market position, as consumption has suffered a still larger reduction, and large stocks are still held. Naphthalene is again in brisk demand, due again to decreased production, accompanied by a steady consumption in the dye industries. Motor benzole and white spirits have continued in good demand, the increased import duties on petrol being immediately followed by a correspondingly increased value for these bodies. This increased price has produced its effect on the gas companies, who are at last waking up to the fact that extraction of benzole for motor benzole is profitable, and is a customer for gas costing nothing for distribution—a customer also taking gas for every hour of the day, and one who makes no complaint if, through extra demands or breakdown of plant, he has to be cut down in his allowance.

Road tar in the home market has altered little in price or demand, although the economies of local authorities in the latter half of the year led to a sudden drop in demand from July onwards. This has been somewhat made up by improved shipments to France, where the quantity of tar put on the roads has increased rapidly during the last few years. This demand from France has led to considerable quantities of tar, both crude and refined, being imported from America.

Gas Stocks and Shares

THE year has certainly been an historical one from a financial point of view. The overwhelming response to the Government's scheme for the conversion of the huge 5% War Loan, launched in July last, had an immediate effect on all markets of the Stock Exchange, and necessitated a complete readjustment of prices. Many investors spent a feverish time endeavouring to place their holdings more advantageously, and, with the reduction in the yields on gilt-edged issues, all classes of securities have been eagerly absorbed, especially those of the fixed-interest variety and the stocks of companies which have maintained their dividend payments during the troublous times of the past few years. In this connection gas stocks and shares were among the first to gain prominence, and many new investors came into the market. Having regard, therefore, to the unfailing regularity with which dividends on these stocks are disbursed, we have no hesitation in complimenting them upon their choice.

The expansion of the Industry has been steady over a period of many years, and its financial status remains unimpaired, so that there is every justification for the belief that its securities will continue to increase in popularity for those requiring high-class permanent investments. Moreover, the position to-day is stronger than ever and a complete denial to those who have prophesied for long past its early demise. Another factor which should not be forgotten is that the progress made has been achieved in the face of competition stimulated by an immense influx of new capital.

Debenture and preference stocks very quickly responded to the change in the investment outlook, and prices of these securities rapidly soared to higher levels, while during the last few months of the year ordinary issues have also been notably prominent in this respect. The general situation was well described by a contributor to the "Financial News" in October last, when he said: "Investors in gas stocks and shares, however, have never had to suffer anxious moments; on the other hand, such securities stand in high repute, and to-day it is hard to find debenture issues giving a return over 4¼% because the quotations have advanced corresponding with the conditions governing the gilt-edged and investment stocks." It is interesting to note that at the present time, by reason of the still further advance in prices, the yield on some of these debentures is under 4%.

Increases in value, therefore, have been so universal that we obviously cannot detail them all here. A perusal of the Stock and Share Lists which appear in the "JOURNAL" will have indicated the position week by week, but the following tables show the appreciations which have accrued since the commencement of the year in the stocks of some of the larger undertakings operating at home, and it will be seen that on the average the increase is in the region of 25%:

Ordinary Stocks.

—	1931.	1932.		Increase over Jan. 1.
	Dividend Paid.	Quotations.		
		Jan. 1.	Dec. 23.	
	%			
Barnet	7	120—125	132—142	14½
Bournemouth 7% max.	7	120—130	145—155	25
Brighton and Hove 5%	6⅜	104—107	127—132	24
Bristol	5	88—90*a*	108—110*a*	20
British	7½	108—113	142—147	34
Cardiff	6	95—98	110—115	16
Commercial	5⅞	92—95	110—115	19
Croydon sliding scale	7	107—110	139—144	33
Derby	8½	120—125*b*	150—160*b*	32½
Gas Light units	5⅜	17/6—18/6	24/6—25/6	7/-
Liverpool	6	96½—97½*c*	119—120*c*	22½
Newcastle units	5⅜	16/—17/-*d*	23/—24/-*d*	7/-
Portsmouth 4%	8	119—124	150—160	33½
Sheffield	6	103—105*e*	112—115*e*	9½
South Metropolitan	6	96—99	121—126	26
South Suburban	6¼	101—104	118—123	18
Southampton	5	76—79	102—107	27
Tottenham	6⅞	103—107	131—136	28½
Wandsworth	7	110—114	137—142	27½

Quotations at: *a*—Bristol. *b*—Nottingham. *c*—Liverpool. *d*—Newcastle. *e*—Sheffield.

Debenture Stocks.

—	Quotations.		Increase over Jan. 1.
	Jan. 1.	Dec. 23.	
Commercial 3%	51—56	73—78	22
Gas Light 3%	52—57	77—81	24½
Liverpool 4%	79—81	100—102	21
South Metropolitan 3%	53—58	78—82	24½
South Suburban 5%	92—97	117—122	25
Tottenham 4%	68—73	95—100	27
Wandsworth 5%	92—97	117—122	25

The majority of preference stocks have made similar advances, but the most meteoric has been that of the South Metropolitan 6% preference, which on Jan. 1 was quoted at 105½ and now stands at 140½—a rise of no less than 35 points.

PERSONAL

SIR FRANCIS GOODENOUGH.

His many friends will be very sorry to hear, as we are to announce, that Sir Francis Goodenough is undergoing an operation to-morrow, Dec. 29.

We learn with sincere regret that the operation, which is of a somewhat serious nature, will mean that Sir Francis will be unable to resume activities for some time in the New Year.

We feel sure that it would be helpful to Lady Goodenough (who will have the warm sympathy of their many friends in the Industry) if those wishing to make inquiries would be kind enough to do so at 28, Grosvenor Gardens (Telephone: Sloane 8226).

* * *

Tributes were paid to Mr. G. P. MITCHELL, Engineer to the Blackburn Corporation Gas Department since 1919, who has been appointed to a similar position at Worcester, when he was presented with a canteen of cutlery from the combined employees on Dec. 23. The presentation was made by two old employees, Mr. Thomas Brooks, meter repairer (51 years' service), and Mr. David Cox, chief meter inspector (49 years).

Mr. J. D. Ashworth, who has been appointed the new Engineer, said Mr. Mitchell had built up the Undertaking to high efficiency, and had not overlooked the employees' social life. Through support and encouragement, he had made it possible for them to have many happy hours when the day's work was done.

Mr. T. E. Richmond, Commercial Assistant, expressed good wishes, and said Blackburn's loss was Worcester's gain. Mr. Mitchell had every sympathy for the protection of old servants, and his initiative and perseverance had gained a name which was an honour to the whole Industry. Mr. E. B. Field and Mr. George Ogden added their tributes.

Mr. Mitchell, in reply, said he would always have pleasant memories of Blackburn and its people. Nine of his assistants had secured positions elsewhere, five as chiefs of gas undertakings.

* * *

Mr. ARTHUR DOCKING, who was formerly associated with Premix Gas Plants, Ltd., has founded the firm of Arthur Docking & Co., Radiant Works, Johnson Street, Westminster, London, S.W. 1, for the carrying-out of industrial heating work.

* * *

Directors of Messrs. Drakes Limited, Mr. M. T. THOMPSON and Mr. JOHN A. DRAKE, have been appointed Joint General Managers of the Company.

OBITUARY

We regret to announce the death of Mr. JAMES W. WILSON, Director of Wilsons & Mathiesons, Limited, Leeds, on Dec. 24, in his 76th year.

* * *

The death has taken place, in his 80th year, of Mr. JOHN BUCKNALL LLOYD, of Shrewsbury, who for some years was Chairman of the Shrewsbury Gas Light Company.

CORRESPONDENCE

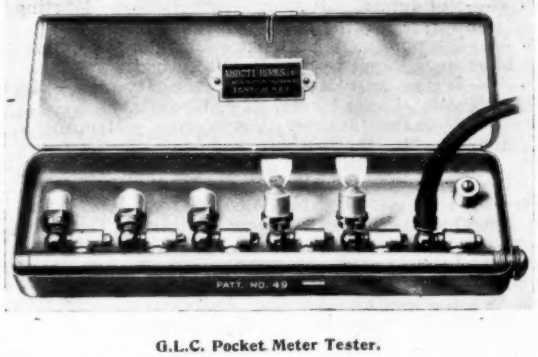
Recent Developments in Gas Fitting Practice

SIR,—Mr. LeFevre is to be congratulated on his paper on "Recent Developments in Gas Fitting Practice" which appeared in the "JOURNAL" of Dec. 14. It explains the difficulties of the much misunderstood taper and parallel threads in an exceedingly lucid and simple manner, and could, with great advantage to those concerned, be repeated in the plumbing trade papers.

For several years my firm has been endeavouring to push the sales of stocks and dies to screw tubes with the true full thread taper (B.S.P. Report 21), but a certain amount of opposition has always been met, due to the following reasons:

(1) Extra work necessary to screw a full thread taper—particularly with solid dies—compared with that expended on screwing parallel threads.
(2) Supposed unsuitability of taper threaded tubes when screwed into parallel sockets and fittings.

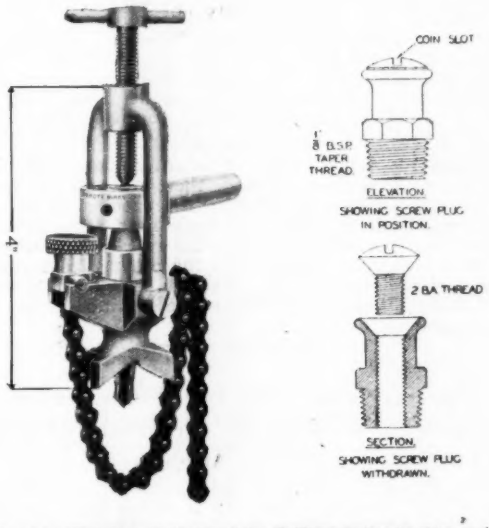
Unfortunately No. 1 is true to a limited extent, but No. 2 is far from being correct, in fact we find the opposite to be the case. If the die is so arranged to screw the full specified length of taper thread a sounder joint can be made between the tube and a parallel screwed fitting, than with a parallel screwed tube into a parallel screwed fitting. The slight distortion taking place in the tube and the fitting is rarely serious, and gives a "grip" not obtained in parallel threads.



G.L.C. Pocket Meter Tester.

It is pleasing to read that the old "Brass Thread" is being rapidly displaced, but I am afraid it will be continued in the cheaper trades due to the fact that lighter gauge tubing can be utilized with this form of thread than with the British Standard Pipe Threads.

With regard to the meter testing device, it may be of interest to know that at the suggestion of Mr. Buckley, of the Malta and Mediterranean Gas Company, we fitted for him a G.L.C. Tester with governed burners, calibrated to burn 1, 2, 3, 4, and 5 c.ft. per hour respectively (instead of 1 c.ft. each burner). By this arrangement, by various combinations of burners, any consumption could be arranged at will between 1 and 15 c.ft. per hour.



Showing Miniature Drill Stand for Drilling Tubes in situ, and G.L.C. Standard Testing Nipples.

With reference to the G.L.C. Standard Pressure Testing Nipple, it may be of interest to gas undertakings to know that the writer's firm is making a small drill stand fitted with a ratchet spanner, chain, and combined drill and tap for drilling and tapping pipes *in situ*, and so fitting the nipple with the minimum amount of trouble.

Yours, &c.,
N. A. BIRKS.

Abbott, Birks, & Co.,
113, Newington Causeway, S.E. 1,
Dec. 21, 1932.

THE NEWS OF THE WEEK

Another Very Large Increase in Output is reported by the Edinburgh Gas Department for the month from mid-November to mid-December, amounting to nearly 20 million c.ft. and equivalent to 5·82% advance over last year's figures.

Offered for Sale recently at Birmingham, by Messrs. Ludlow, Briscoe, & Hughes, were 36 lots of shares (each lot being 10 ordinary shares of £10 each) in the Solihull Gas Company. The total of the sale amounted to £5075 10s., the highest price paid for a lot being £141 15s. and the lowest £140.

The Latest Available Returns regarding the Gas Industry in Yugo-Slavia relate to the year 1930, at which time fourteen towns in the country were provided with gas-works, the production during that year reaching a total of approximately 453 million c.ft.—an increase of 3·6% over the figure for the previous year.

Owing to Traffic Vibration two water mains and a gas main in Spring Street, Bury, were fractured. The water rushed into the gas main and cut off the supply to about 200 houses. In some instances the water came through the gas meters into the houses. For four days a section of the consumers were without a gas supply.

A Christmas Suggestion was made by the Newcastle-upon-Tyne and Gateshead Gas Company in an advertisement which appeared in the local Press last week. The object of the announcement was to secure "last-minute" orders for gas fires before Christmas, and the Company's forward service policy—"Order your gas fire to-day . . . it will be fixed in your home to-morrow"—was well in evidence.

The Sunderland Gas Company Directors have been requested by the Finance Committee of Sunderland Corporation to withdraw their application for a Special Order in order to avoid further litigation. A Board of Trade inspector recently held an inquiry into the Company's application, and suggested that the parties should negotiate further. The Corporation Finance Committee have decided, however, that they cannot agree to the Company's Order.

What the Chefs Saw.—The enterprise of Radiation Limited, as expressed through their Advertising Department, has been demonstrated by the production of a first-class record of the music of their now well-known film "What the Chefs Saw." Both the refrain on one side of the record and the "talk" on the other are remarkably clear, and provide evidence alike of the trustworthiness of the "Regulo" and of the excellence attained in the art of record making.

Special Courses at Leeds University.

Department of Coal Gas and Fuel Industries, Session 1932-33.

A series of six lectures on furnaces and the utilization of coal will be given by Prof. J. W. Cobb on Tuesdays at 6 p.m. and 7.30 p.m., commencing Jan. 17 and concluding Jan. 31, 1933. (Fee for the course, 12s. 6d.)

A series of six lectures on the preparation of coal for the market will be given by Dr. J. N. Williamson, Lecturer in Mining and Ore Dressing, University of Leeds, on Tuesdays, at 6 p.m. and 7.30 p.m., commencing Feb. 7 and concluding Feb. 21, 1933. (Fee for the course,* 12s. 6d.)

A series of six lectures on the distribution and utilization of gas will be given by Mr. C. A. Masterman, M.A., F.I.C., of the Gas Light and Coke Company, on Tuesdays, at 6 p.m. and 7.30 p.m., commencing Feb. 28 and concluding March 14, 1933. (Fee for the course, 12s. 6d.)

A series of eight lectures on bye-product coking processes (including the utilization of coke oven gas for public supply), by Mr. C. P. Finn, M.Sc., F.I.C., M.I.Chem.E., Coke Oven Manager, Manvers Main Collieries Company, will be given on Wednesdays at 6 p.m. and 7.30 p.m., commencing Jan. 18 and concluding on Feb. 8, 1933. (Fee for the course, 15s.)

A course of six lectures on the microscopic study of engineering alloys, followed by practical work in the laboratory, will be given by Mr. A. Preece, M.Sc., on Wednesdays, at 6 p.m., commencing Jan. 18, and concluding Feb. 22, 1933. The course will be divided into two parts, which may be taken separately, though all intending students are expected to enrol on Jan. 18. (Fee for each part (including laboratory work), 7s. 6d.)

The laboratory of the Department will be open on Wednesday evenings between 6 p.m. and 9 p.m. from Jan. 18 to Feb. 22, 1933, for a limited number of students who have already received some chemical training, but who desire instruction in fuel calorimetry and pyrometry. More advanced students, capable of independent work, may also be admitted to the laboratory during these periods. The earliest possible application from intending students is requested. (Fee, 15s.)

* The combined fee for this course and the preceding one is £1.

Orders for Coal-Cleaning Plant.

Orders from collieries in Durham, Holland, and Czecho-Slovakia for coal-cleaning plant to the value of £50,000 have been booked by the Birtley Company, of Birtley, Durham, we learn from the "Financial Times."

Col. K. C. Appleyard, Managing Director of the Company, said that orders received by his firm this year reached £200,000. He added that, although this plant was originally made in the United States, Britain was now becoming pre-eminent in its production.

Forthcoming Engagements.

Jan. 10.—FEDERATION OF GAS EMPLOYERS.—Meeting of General Committee, 28, Grosvenor Gardens, S.W. 1.

Jan. 10.—N.G.C.—Meeting of Central Executive Council, 28, Grosvenor Gardens, S.W. 1.

Jan. 12.—MIDLAND JUNIOR ASSOCIATION.—Meeting in Birmingham. Paper by Mr. H. Smith.

Jan. 14.—SCOTTISH JUNIOR ASSOCIATION.—Joint Meeting in Glasgow. Address by Mr. C. Valon Bennett.

Jan. 14.—WESTERN JUNIOR ASSOCIATION. — Meeting at Exeter. Paper by Mr. D. L. Copp.

Jan. 18.—B.C.G.A.—Meeting of Executive Committee, 28, Grosvenor Gardens, S.W. 1, 12 noon.

Jan. 19.—SOCIETY OF BRITISH GAS INDUSTRIES.—Council Meeting at 2.30 p.m.

Jan. 21.—YORKSHIRE JUNIOR ASSOCIATION.—Meeting at Halifax. Paper by Mr. J. Bradbury.

Jan. 27.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting. Paper by Mr. P. Wedgwood.

Jan. 28.—WALES AND MONMOUTHSHIRE JUNIORS.—Meeting at Neath. Paper by Mr. A. J. Howells.

Feb. 2.—MIDLAND JUNIOR ASSOCIATION.—Meeting. Address by Mr. H. Southern.

Feb. 4.—MANCHESTER DISTRICT JUNIOR ASSOCIATION.—Visit to Burnley Gas-Works. Paper by Mr. A. F. Rhead.

Feb. 4.—SCOTTISH JUNIOR ASSOCIATION (WESTERN DISTRICT).—Meeting in Glasgow. Diploma Thesis by Mr. J. Webster and paper by Mr. N. C. Sturrock.

Feb. 17.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting. Paper by Mr. P. Richbell.

Feb. 18.—YORKSHIRE JUNIOR ASSOCIATION.—Meeting at Bradford. Paper by Mr. F. J. Dent.

1932 "JOURNAL" Directory.

Page 8.—BLACKBURN. Mr. J. D. Ashworth appointed Engineer and General Manager vice Mr. G. P. Mitchell, resigned.

Page 76.—WORCESTER. Mr. G. P. Mitchell appointed Engineer.

Joint Gas Conference at the B.I.F.

Preliminary Programme.

The following preliminary programme has been arranged for the Joint Gas Conference to be held at the British Industries Fair, Castle Bromwich, Birmingham, in February next. The President of the Conference is Sir Francis Goodenough, C.B.E.:

Tuesday, Feb. 28.

10.15 a.m.	Assemble at Conference Hall, British Industries Fair, Castle Bromwich. Opening of Conference.
11. 0 a.m.	Presidential Address by Sir Francis Goodenough, C.B.E.
1. 0 p.m.	Official Luncheon at the Fair (delegates paying for their own luncheon).
Afternoon.	Inspection of exhibits at the Fair.

Wednesday, March 1.

10.15 a.m.	Assemble at Conference Hall, British Industries Fair.
10.30 a.m.	Address by Lieut.-Col. W. M. Carr, M.C., on "The Industrial Uses of Gas." Discussion.
1. 0 p.m.	Luncheon at the Fair by invitation of the Birmingham Chamber of Commerce and the Fair Management Committee.
Afternoon.	Inspection of exhibits at the Fair.

Thursday, March 2.

10.15 a.m.	Assemble at Conference Hall, British Industries Fair.
10.30 a.m.	Address presented by the British Commercial Gas Association on "Gas for Hot Water Supply and Central Heating." Discussion.
	No special arrangements are being made for Luncheon.
Afternoon.	Inspection of exhibits at the Fair.

Selling Vertical Coke at Guelph.*

Success of a Glover-West Installation.

Guelph, a city of some twenty-three thousand people, is situated in a farming area sixty miles north-west of Toronto, and has a number of industries, including carpet and woollen mills, lumber yards, wood-working mills, an agricultural implement factory, a foundry, and several other small industries.

The original Guelph Gas Company was formed in 1868, and gas was turned on for the first time on Jan. 18, 1871. The Company gradually increased its output until 1903, when it was taken over by the city as a public utility.

In the following year, the present Manager, Mr. Harry Williams, took over the plant, and his many years of excellent service to the Company will be recognized by the Canadian Gas Association in June, 1933, when he will be inaugurated as President.

Carbonizing Plant.

In 1907, stop-end horizontal retorts were installed by Mr. Peter Young, now of Waterton, N.Y., and his associates. In 1931, the West Gas Improvement Company were awarded a contract to install six 40 in. by 10 in. by 25 ft. Glover-West vertical retorts, together with coal and coke handling plant. The plant installed in 1907 cost $65,000, whereas the one just completed cost $120,000, but has a considerably greater capacity and is modern in every respect.

An interesting point concerning this new plant is that it has been financed without issuing debentures—a creditable achievement to a works with an output of approximately 400,000 c.ft. per day. Not only has the Gas Department been able to achieve this under Mr. Williams' excellent guidance, but, since the new plant was put into operation in December, 1931, the maximum rate has been reduced to 90 cents per 1000 c.ft., and the lowest rate, depending on consumption, is 80 cents. These rates are lower than any city of the size of Guelph on the American Continent.

The plant is equipped with two step-grate type producers, each of which is capable of supplying producer gas for the six retorts. As a means of conserving as much large coke as possible for sale, an air blower is attached to the producers for the purpose of burning small fuel.

During the winter months, the whole of the available coke produced is sold, and frequently carts are drawn up at the gas-works gate before the plant is opened for the day's business, and each coke discharge finds immediate purchasers.

The retort house is arranged so that an addition of two retorts may be made with the minimum expenditure. The natural-draught waste-heat boiler is also capable of handling the waste gases of eight retorts.

The whole plant has a very pleasing appearance and is kept scrupulously clean.

* From "West's Gas."

THE NEWS—continued.

Westminster City Council and Gas Light and Coke Company Bill.

At the last meeting of the Westminster City Council the Law and Parliamentary Committee reported that they had examined the Gas Light and Coke Company's Bill, with reference to which the City Solicitors had reported that the Preamble of the Bill recited that local authorities had in many cases provided accommodation for the working classes, and that in consequence of action taken by certain of the authorities tenants were prevented from obtaining a supply of gas for any purposes other than certain specified purposes, and the tenants of others of such houses had been prevented from obtaining a supply of gas for any purpose, and further that it was inexpedient that the occupiers of houses of which the cost of erection was defrayed out of public funds should be prevented from obtaining gas, or be restricted as to the purposes for which they might use gas.

Clause 4 provided that a housing authority should not in or in connection with the disposal of any building or part of a building or land belonging or leased to them and being within the Company's limits of supply:

(i.) Impose any condition or restriction with respect to the form of heat, light, power, or energy to be supplied to or used in any such building or part thereof, or to any land or any building erected on such land, or the taking from any particular Local Authority, Company, &c., of any form of heat, &c.

(ii.) Do anything which would prevent or be likely to prevent any person owning or occupying any such building or part thereof or any such land from using thereon any particular form of heat, &c., from any particular Local Authority, Company, &c.

(iii.) Give any preference or priority to or subject to any prejudice or disadvantage any person on account of his taking or agreeing to take the supply of heat, &c., of any particular firm or from any particular Local Authority, Company, &c.

Sub-Clause 2 of the same Clause provided that any such term, condition, or restriction as aforesaid in force at the date of the passing of the Act under any tenancy agreement or any resolution of a Housing Authority or otherwise, and any condition, &c., made or imposed after the said date in contravention of the Clause should be void.

The Housing Committee had considered the Bill and had informed the Law and Parliamentary Committee that, in their opinion, there was no justification for the application to Westminster of these powers.

The latter Committee agreed with the views of the Housing Committee and pointed out that the effect of the powers sought would prevent the Council from maintaining an effective control over its property. They understood that other Local Authorities might be petitioning against the Bill, and it might therefore be convenient in the interests of economy to join with them in opposing the Bill. The Council decided that a Petition be presented against the Bill, or if deemed expedient that it should join with or support the London County Council and other Local Authorities in petitioning against it.

Advertise!

Major Astor's Advice.

That nearly half the space available at Olympia for the Advertising and Marketing Exhibition and Conference which is to be held there from July 17 to 22 next year has already been booked was announced at a lunch recently given by Major the Hon. J. J. Astor, President of the Advertising Association, to members of the General Committee of the Exhibition at Dorchester House.

Major Astor, describing the Exhibition as the latest offspring of the initiative of the Advertising Association, said that these were times that were the despair of the prophets. By July the trade returns might be ascending the slopes of an Everest or they might be down in some new sea of depression. If the Advertising Association had been of different mettle it might have been content to sit with folded hands waiting for the Oracle. If so it would have been unworthy of its principles. The first principle was that whether times were good or bad the activities of the Association could only better them.

"If," said Major Astor, "you advertise when trade is on the upward trend you stand to garner a good harvest; if on the down grade, you will at any rate parachute and not plunge. It is the old lesson that those who advertise wisely in a period of slump are the first to profit in the ensuing recovery. The earthquakes of the last few years

THE NEWS—continued.

have shaken the world and altered the field of our future trade. Old markets have vanished; new ones are appearing. The nations of the world are changing in habits and outlook, and advertising and marketing must adjust themselves to the new conditions or they will fail.

"The Exhibition and Conference next July will be a reconnaissance in force of a post-slump world."

Bargaining for a Gas Undertaking.

The suspended price bargaining between Bingley Urban District Council and Bradford Corporation, in respect of Bingley's desire to take over the gas undertaking at Wilsden—a district which has come into Bingley since Bradford embarked on gas supply there—was the subject of a debate in Bingley Council on Dec. 19, when the Lighting Committee reported failure to come to terms with Bradford.

The Committee (which controls both the Gas and Electricity Undertakings of Bingley) stated that Bradford had declined Bingley's final offer of £18,000 for the Wilsden Undertaking, and the Committee felt that the difference between the offer and what Bradford was likely to accept was so wide that little good could come of pursuing the matter further at present. They therefore proposed that it be deferred six months. The only alternative would be to go to arbitration; and in view of the uncertainty of result from such a course the Committee did not recommend it.

A National Broadcast.

Recently Mr. George Stevenson, Engineer, Manager, and a Director of the Long Eaton Gas Company, gave a broadcast talk in the National programme on the subject of "The Worker in Industry—New Trades for Old." He pointed out how, in pre-war days, Long Eaton was almost wholly dependent for its existence on the lace trade. After the war there was a temporary boom and then trade fell right away. The need for new trades became very urgent.

Mr. Stevenson described at length some of the new industries started at Long Eaton, and particularly mentioned the making of elastic braid, springs for upholstery, and the special treatment of rubber now used in various manufactures.

These industries had provided a great deal of work for Long Eaton people.

Social Evening at Chesterfield.

The Second Dinner and Social Evening of the Chesterfield Corporation Gas Department took place on Monday, Dec. 19, when some sixty members sat down to a very seasonable menu.

The company were presided over by Alderman Geo. Clark, J.P., Chairman of the Gas Committee, Councillor A. W. Swale, Vice-Chairman (Mayor of Chesterfield), and Mr. H. Davies, Engineer and Manager of the Undertaking. After dinner the usual toasts were drunk and a musical programme brought a very enjoyable evening to a close.

During the evening Mr. H. Davies thanked his officers and staff for the loyal way they had co-operated with him during the past twelve months, and was very pleased to say that the consumption of gas had shown a steady increase for the year.

The arrangements for the evening were carried out by Miss M. Bryant, Mr. C. S. Davies, and Mr. S. Davies.

Gas Heated Hot Water Appliances.

In two lectures to the staff of the Leamington Priors Gas Company and neighbouring gas undertakings, and architects and builders interested in the subject, Dr. D. A. Winter, of Messrs. Radiation Ltd., considered the various types of gas heated hot water appliance under two headings—instantaneous heaters and sink storage heaters; and circulators and lagged storage heaters.

The flue ways in the appliance itself, said Dr. Winter, must be adequate to remove all the products of combustion from the flame zone. It is essential that these products shall not accumulate, or they may contaminate the fresh air supply to the flames, when the gas will be unable to burn completely. Such an effect will result in inefficiency in the appliance and, possibly, dangerous conditions should the flames be extinguished while the gas is still passing.

It is customary to use luminous flames on account of the stability at the low consumptions required for thermostatic control under maintenance conditions. The bunsen type of flame under similar conditions must not be at all keenly aerated or there will be danger of the flame lighting back to the injector. Luminous flat flames also possess the advantage that they can be set closely together and can still receive sufficient air for complete combustion. In consequence large volumes of gas can be burned in relatively small burner areas.

Luminous flames must be so placed that they do not impinge on any solid surface, or chilling of the flame will take place with deposition of soot.

Turbulent motion should be given to the stream of hot products of combustion in order that their heat shall be scrubbed out as completely as possible. This turbulent motion is achieved by causing the maximum number of changes in the direction of flow of the hot products, whereby the "dead layer" is repeatedly replaced.

In regard to materials, the boiler proper, and frequently also the storage tank, must be mechanically strong to withstand water pressure and heat stresses. Its material should be cheap and easy to work. Cast iron and copper satisfy these conditions, and the choice between them is decided by the nature of the water to be heated. The acids contained in acid soft water seriously corrode cast iron when the water is heated. Copper, however, withstands their attack. In consequence, heaters for use in acid soft water districts are made either of copper or of a copper alloy.

In the circulator type of appliance it is essential that the heated water shall be delivered to the top of the storage cylinder, where it is at once available to the draw-off taps.

The thermostat, by cutting down the gas supply when the storage is full of hot water, prevents overheating, thereby saving gas and assisting in economic running.

The maintenance consumption of any appliance is determined by the heat loss due to air cooling of the warm surfaces. Effective lagging of all the hot surfaces, concluded Dr. Winter, considerably reduces maintenance consumption and leads to economic running. For instance, in a heater of from 20 to 25 gallons storage capacity, the lagging is such that a maintenance consumption of the order of 1000 B.Th.U. per hour only is required.

Pits Without Ponies.

In connection with an appeal against the continued use of pit ponies below ground, the Pit Ponies' Protection Society, of 82, Boundary Road, London, N.W., have published a list of mines at which no horses and ponies were employed at the end of June, 1932. The list is based upon information supplied by the Mines Department, and it includes only mines employing 30 or more persons underground. It is pointed out in support of the appeal "that over 500 mines (apart from more than 600 very small pits) do not now use animal haulage below ground, that the more modern mechanical methods of transport are officially said to reduce both costs and accidents, that since 1928 the amount of coal carried by conveyors underground has been doubled, and that more than one-fifth of the entire 1931 output (47¾ million tons) was mechanically conveyed in this way at or near the coal face."

World Power Conference.

The preparatory work of the Organizing Committee of the next World Power Conference, which will take place in 1933 in Scandinavia, proceeds steadily and successfully. The first plenary World Power Conference was held in London in 1924, the next in Berlin 1930. There have also been Sectional Meetings with concentrated programmes, for instance at Basel in 1926 and London in 1928. The Scandinavian Conference will be such a special meeting, dealing with the energy problems of large industry and transport.

Participation and collaboration of fifteen countries (outside Scandinavia) have been assured. More than 170 reports have been announced so far. About 1000 persons and organizations have written for information, and many of them are already inscribed in the participants' list.

About forty reports to be published at the meeting deal with problems of energy supply in the large-scale industry, such as combined power and heat supply, the rôle of the large-scale industry in national power schemes, &c. Among these papers some studies suggesting quite new solutions of several important technical and economical problems are contained. In others are presented valuable technical and economical results and experience. A considerable number of technical papers treat the problems of long-distance gas transmission, now particularly prominent in many countries.

The sectional meeting will take place at Stockholm between June 26 and July 10, 1933.

Gas Undertakings (Basic Charges)

Proceedings of a Joint Parliamentary Committee

(*Before Lord* MESTON (*Chairman*); *Viscount* HEREFORD; *Lord* CHESHAM; *Lord* HUTCHISON OF MONTROSE; *Lord* RHAYADER; *Mr.* OSWALD LEWIS; *Dr.* HOWITT; *Mr.* ERNEST YOUNG; *Mr.* T. WILLIAMS; *and Capt.* PEAKLE.)

A Joint Committee of both Houses of Parliament sat at Westminster recently to consider the application and working of the basic price system of charging by gas undertakings. The reason for the inquiry was that the Board of Trade, appreciating that the application of the basic principle was spreading, desired careful consideration of the problem of applying multiple basic prices to gas undertakings having differential prices in different parts of their areas, as distinct from the application of a single basic price for each undertaking. The Board did not put forward any alternative, but simply asked the Committee to report upon the multiple basic price system, which system the Board did not favour.

The terms of reference to the Committee were as follows: "To consider and report whether, as one of the methods of giving effect to the basic price system of charge by gas undertakers in those cases in which a power to make a differential charge in respect of any part of the existing or intended limits of supply is proposed to be continued or granted, it is expedient to authorize a separate basic price in respect of each such part, arrived at by adding to the basic price fixed in respect of the area for which no differential charge is proposed a sum representing the differential charge as proposed to be authorized or continued or as actually made."

Tuesday, Dec. 13.

The Board of Trade was represented by Mr. F. J. Wrottesley, K.C., and Mr. J. H. Thorpe. The National Gas Council, who put forward views in favour of multiple basic prices, was represented by Mr. W. E. Tyldesley Jones, K.C., and Mr. H. Royston Askew.

Mr. WROTTESLEY, in his Address to the Committee, first dealt briefly with the maximum price and sliding scale systems. He pointed out that the maximum price system gave the consumer two forms of protection. In the first place, the price could not exceed a certain maximum, even though the dividend might fall to *nil*, and there was also the protection of the maximum dividend. Under that system, however, when a company was selling at a low price—perhaps half the maximum price—but was not allowed to increase dividends above the maximum, all the incentive to improve practice further was gone. The most they could hope for was to get a substantial gap between the selling price and maximum price, so that if bad times arose, as for instance, a coal famine, leading to a great increase in the price of coal, the shareholders would know that their maximum dividend was at any rate secure.

The standard price and standard dividend system, coupled with the sliding scale, was, generally speaking, successful so long as gas remained, as it was in the old days, an illuminant, but was not entirely satisfactory when gas was sold on a thermal basis. Under that system the highest price charged for gas to any consumer, however unremunerative, was the price which determined the dividend paid, and the supply to the small and possibly uneconomic consumer became the touchstone of efficiency. However cheaply a company supplied large industrial users, that low price did not enter into the calculation of dividends.

Counsel went on to describe how the circumstances which arose during the war had imposed a great strain on those two systems. This had occurred at a time when gas was needed in ever-increasing quantities and when the country was calling on the gas companies to become a link in the chain of munitions supply. He then went on to discuss briefly the difficult financial circumstances of gas companies at the end of the war, and the steps taken under the Statutory Undertakings (Temporary Increase of Charges) Act, 1918. Many companies, including the Gas Light and Coke Company and the South Metropolitan Company had taken advantage of the provisions of that Act, but even so, as the result of the war, the Gas Light and Coke Company's 4% stock, which had stood at 103 before the war, was at 54¼ in 1920, and the South Metropolitan Company's stock, which had stood at 112 before the war, had fallen to 54.

In 1920 the South Metropolitan Gas Company had promoted a Bill to obtain power to charge for gas on the thermal system, and in order to put right the matter of dividends, they had proposed a basic price system, the underlying principle of which was that the undertaking should be regarded as a partnership of shareholders and consumers. In practically every case in which the basic system was applied, the employees also were brought in as partners.

Counsel then explained the working of the basic price system by means of an illustration.

Discussing further the features which distinguished the basic system from the maximum price or sliding scale systems, he said that under the former the shareholders were not required, generally speaking, to take less than the basic dividend. In other words, what used to be a standard dividend, subject to diminution if the cost of gas rose, had now become not merely a basic dividend but also a minimum, however much the price of gas might rise. A basic price company was not penalized even if it sold gas at above the basic price owing to lack of efficiency or economy—and companies had been guilty of inefficiency.

MEASUREMENT OF DIVIDEND.

Another important feature of the basic system was that no longer was the Company's dividend measured by the price charged to the small or domestic consumer, but on the average charged to all consumers. Without doubt a company could under this system, as a system, get a low average price as the result of one or two very large supplies, such as supplies for industrial purposes. Recently a suggestion was put before a Committee that bulk supplies should be included for this purpose. The bulk supply to a neighbouring company might be as much as the whole of the gas supplied to the consumers of the vendor company in its inside area, and one saw the danger that that bulk supply did not carry with it any cost of distribution and could probably be sold at half price. One could conceive that in those circumstances the average selling price of gas would be low and an enormous dividend would be authorized. Then when the company looked about for the money (because they did not earn the money by selling almost at cost), when they looked to the source from which they could earn their dividends, they would have to look to the small domestic consumer. If some means of protection were not devised, gas sold at a ridiculously cheap price to an industrial undertaking might be brought in under the basic system (it was one of the objects of it) and averaged.

The attitude of the Board of Trade was right when they said that such a system must be applied with caution. A vital point was that the basic price must not be fixed too high.

The object of the basic price system, and its only justification, was that it should provide an incentive to the gas-works proprietor to show initiative and skill, and at the same time control the Gas Industry in the matter of charges. He submitted a statement giving a rough idea of how the system had worked in the not very numerous cases to which it had been applied. Although only about twenty companies had adopted the basic system, they were big companies, and governed the supply of more than half the gas supplied in the country.

The reason why it was vital that the basic price should not be fixed too high was that if that were done one was simply making a consumers' benefit bigger by playing with figures, and it was on the consumers' benefit that the dividend depended.

The bulk of the companies which had obtained basic price powers had obtained them by promoting Acts of Parliament. In most cases, one-third of the amount of the consumers' benefit was divided between the shareholders and co-partners. Counsel gave details of the working of some of the companies, and pointed out cases in which, although gas had been sold at prices below the basic prices, so that excess dividends were authorized, they had not the actual money in the till to pay the full dividends authorized, but only part of the excess dividends.

Lord RHAYADER asked if all the companies concerned had paid the basic rate of dividend regularly throughout the years in which the basic system had applied.

NOT ENOUGH IN THE TILL.

Mr. WROTTESLEY said that so far as he knew that was so. It did not mean that the companies were not prosperous or not able to make money, but merely that, although they had qualified for these prizes, they had not enough in the till to meet them at the end of the year. These prizes were the additional dividends over the basic dividends.

Looking at the statement, the proposition he put before the Committee was that the basic prices in many cases were not controlling the activities of the companies concerned. There were large authorizations of dividend, but the companies did not seem able to earn them, and, therefore, there was no question that the price of gas was standing at its present level in the areas concerned not because the incentive was working; it was the goodwill of the Directors, or their respect for public opinion, which was keeping the price of gas at its present level. One might explain it by saying that obviously they were charging too little for gas, but he did not think that that was a proposition which would meet with universal success, even in the Gas Industry. The whole object of the basic system was to substitute for the goodwill of the Directors, or anything of that kind, a properly balanced system which would induce the Directors to press on the cheapening of gas, and so enable a corresponding increased dividend to be paid. But it was clear that the incentive provided in many of those cases was not to bring the price of gas lower, but to bring it higher.

Again, therefore, he urged that the system must be viewed carefully and applied with caution.

The question before the Committee was what it should recommend as a general rule to apply to a company which had two or more areas—an inner and outer area—with differential prices ruling in the different areas. A theory which was strongly argued for by the Industry was that in the outside areas the basic prices should be even higher than they were already, and should be arrived at by adding to the basic of the inside area the whole of the differential allowed to be charged in the outside area. The Board of Trade, after the most careful consideration, had formed the opinion that that principle was quite unjustifiable. That principle was wrong, and unfair to the consumers; it would lead to all sorts of injustices and anomalies.

Counsel then discussed the principles underlying the application of differentials, and said the practice was that if, for instance, a sliding scale company charged 6d. in the inside area and 1s. in the outside area, the extra sixpence charged in the outside area should not count as a higher price so as to affect the slide, because in that case there would have been adjustments of the dividend downwards. In order that the companies should not be victimized it was the practice to provide that the extra charge should not prejudice the dividends paid under the sliding scale provisions.

The proposal put forward in the Terms of Reference to this Committee, however, was not dealing with the situation in that way, and it was suggested that the differential should be used when the basic system was adopted; that the basic price in the outside area should consist of the basic price in the inside area *plus* the differential. Thus, if the basic price in the inside area were 6d., and if the differential for the outside area were another 6d., then the basic price in the outside area would be 1s., and every time the price of gas was brought down below 1s. in that outside area some fresh dividend authorization would be earned. So that, whereas in the old days of the sliding scale the differential was excluded from the calculation because it would have harmed the companies, now the Industry was claiming that it should be brought into the calculation because it would assist them.

Differentials Not Compulsory.

Generally speaking, differentials were not compulsory on a company; they were a power, and companies were allowed, and indeed encouraged, to get rid of them when the occasion required, and when the need for them disappeared.

In approaching the problem as to the proper method, the Board of Trade, of course, were quite disinterested; they were a Government Department, and were merely anxious to ensure that what was done was fair. They were bound to ensure that something which was in process of spreading so that it was likely to apply to the vast bulk of gas sold in the country should not contain seeds of injustice to any of the persons concerned. In approaching the matter the Board of Trade were bound to remember that it was not desirable that the Gas Industry or any public utility industry should make greater profits than were necessary to attract capital to the Industry from time to time, and to encourage good, skilful work; that Parliament, in respect of these statutory undertakings, would not favour or smile on any scheme which would give them larger profits than were really necessary to the proper conduct of the business. The Board wanted guidance in framing their Orders.

Counsel suggested that a gas company, in getting a differential charge authorized, had obtained very favourable terms for its outside new business. If an ordinary commercial undertaking, as distinct from a statutory undertaking, were offered new business along those lines—given a new field, given a monopoly in that field, and then told they could charge a price representing the extra cost of exploiting that field—he would have thought they would jump at it.

As showing that, as the result of development in supply areas, the tendency was for differentials to be reduced and finally dispensed with. Counsel produced a statement constructed from the returns made to the Board of Trade. It was found that, of the 92 companies having differentials, which were examined, 32 had ceased to charge a differential. His general submission was that, as the costs fell in the outside areas, the differentials ought to disappear.

The whole basic system was experimental; it had been tried only since 1920. It presented enormous advantages to the Industry, and, remembering that advantages to any industry in this country were worth thinking of at the present time, the Board of Trade did not desire to see the basic system abandoned. It was desirable to encourage the Gas Industry, by, means, if necessary, of the basic system, carefully adapted so that it did no injustice. It was desirable to extend the basic system, for by doing so one would encourage gas companies to take on more and more of the industrial load, which meant using a national fuel. If a basic price were fixed (in an outside area) consisting of the inside basic price *plus* the differential, then, as the area developed and the differential cost fell, the shareholders obtained increasing dividends authorized, equivalent to, say, one-sixth of the money so saved. Every penny off the differential was used to create an imaginary fund, which was called the consumers' benefit, and the shareholders were to have the right to one-sixth of that by way of excess dividends. If that were right, the Gas Industry would get two benefits out of the consumers. They began by getting the benefit the consumer was made to pay for the increased cost of supplying him with gas; and, secondly, they made the consumer pay permanently a higher dividend just because the increased cost had run off and disappeared. How could that be justified?

One would imagine that it was very much easier to make improvements in cost in an outside area which had only just started to develop or which was at the moment sparsely populated, than in an inside area, which was fairly built up, and which had been supplied for years. If that were so, and if a time arrived when the excess costs outside had disappeared, and the proper time had arrived for charging a uniform price throughout, a system of multiple basic prices would bring about an extraordinary state of affairs; that for all time, although costing no more to supply than the inside, the outside area was to contribute more dividend authorization than the inside.

The Chairman asked if Counsel's argument was going to be only negative, or whether he was going to suggest something.

Mr. Wrottesley said he was confined to a negative argument by the Terms of Reference.

Undesirable Manipulations.

Counsel then illustrated the working of the multiple basic system, and said that the system enabled most undesirable manipulations to take place from one area to another.

He asked the Committee to report that it was not expedient to authorize separate basic prices in respect of the various outside areas by adding to the basic price for the inner area the various differentials fixed with respect to the outside areas.

No evidence was called on behalf of the Board of Trade.

Mr. W. E. Tyldesley Jones, K.C., for the National Gas Council, said there was a different side to the question from that which had been touched upon so far. The question as to whether it was the right system or not had been discussed at great length before a Committee of the House of Lords in connection with the Bath Company's Order, where the Board of Trade had said it was wrong, whereas the Gas Company concerned, and the local authority, had said that it was right, and that the single basic price was wrong. The Committee of the House had decided in favour of the multiple basic system in that case.

It was interesting to hear Mr. Wrottesley say that the Board of Trade did not object to the basic system, but desired to see it extended. This was a recent conversion. When the basic price system was first put before Parliament in 1920 by the South Metropolitan Gas Company, it was opposed by the London County Council, by the City Council, and by a large number of other local authorities; and it was objected to in a report by the Board of Trade. But the system was approved. In this connection he was referring to the basic price system, and not to the subsidiary question of multiple or single basic prices. From 1920 onwards the system was applied in various cases. In 1928, however, the Board of Trade had put a strong report against the South Suburban Company's Bill, which sought to apply the basic price system. They had pressed for a joint Committee of the two Houses to consider whether the basic price system ought to be allowed at all; a joint Committee was appointed, presided over by Lord Chalmers. The Board of Trade had appeared before it, and after three days' discussion it had decided that the basic price system was right and ought to be allowed. Up to that time the Board of Trade had fought it tooth and nail.

He urged that the system was right, and was the only fair system in the interests of the consumers. The basic price system was applicable to every one of the London Gas Companies, with the assent of the London County Council.

A blot on the sliding scale system was that a reduction of differential meant no advantage to the company. The whole incentive was to keep the price up in the outer areas and reduce it in the inner area, and to give the benefits of economies to the inner area although they had been earned in the outer area. They could use economies effected in the outer area for the purpose of reducing prices all over the limits of supply by a certain but smaller figure (maintaining the same differential), and that was grossly unfair to consumers in the outer areas. Again, under the Board of Trade's basic method it would be in the Company's interests not to reduce the differential, but to use the money (which ought to be applied in reducing the differential) for reducing the price to other people in the areas which had not in fact contributed to the economies that had enabled a reduction to be made.

Lord Hutchison asked if it were suggested that companies had the consideration of the shareholders at heart only.

Mr. Tyldesley Jones said it was not. If the companies did consider the interests of their shareholders only, the figures put forward by Mr. Wrottesley would be very different from what they were in fact. Mr. Wrottesley's statement had shown that the companies had so applied the basic price system as to give the consumers far greater proportionate advantages from economies that had been effected than had been given to the shareholders.

Lord Rhayader asked if the Board of Trade had sanctioned any multiple basic prices.

Mr. Tyldesley Jones replied that they had.

Wednesday, Dec. 14.

Mr. Tyldesley Jones said that even under the sliding scale system a reduction of price might be made, and the revenue produced by selling gas at the reduced price might not be sufficient to pay the full dividend authorized; companies had reduced prices often to a greater extent than they would have done had they considered the interests of the shareholders only. It had been emphasized by Mr. Wrottesley that the basic price, under the basic price system, must not be fixed too high; the

same was true, of course, of the standard price under the sliding scale system; that also must be a fair price.

The defects of the sliding scale had brought about the invention of the basic system in 1920, and those defects were that the highest price charged for gas in the inner area ruled the dividend; that if the costs increased and the price had to be raised, the dividend was apt to disappear until a minimum was applied; and the reduction of differential gave no advantage to a company under the sliding scale.

The statement submitted by Mr. Wrottesley showed conclusively that the basic price system had not been an inducement to companies to keep up the prices of gas so that the revenue received would be sufficient to pay the maximum dividends authorized. On the contrary, prices had been reduced far below the level at which it would have paid the shareholders best to have maintained them (bearing in mind that the authorized dividends could be distributed only if the revenue were sufficient). It was not the fact that the tendency of the basic price system was to induce companies to keep prices up.

Asked if it were part of his argument that the Directors had deliberately fixed prices at these low levels, which would not produce sufficient revenue to pay the full authorized dividends, Counsel said that they did deliberately fix prices at those low levels. He pointed out that the gas companies were facing the keenest competition from electricity and oil, and they had reduced the prices of gas in the interests of their businesses. He was not saying that the basic price system induced them to lower prices below the levels referred to, but that it did not prevent them bringing the prices down to a level far below that at which it would pay the shareholders best to maintain them. Again, if, by selling at a low price, a company were authorized to pay a largely increased dividend, but had not revenue sufficient to pay it in any one year, they could not carry forward the authorization to a following year.

Counsel then quoted results showing that the basic price system had not resulted in a greater percentage of dividend increase than the increase under the sliding scale, and that the application of multiple basic prices had not resulted in greater dividend increases than with single basic prices.

Mr. TYLDESLEY JONES said that if an alteration had been brought about as the result of the invention by a company of a new method which had reduced costs completely, the company concerned should not be deprived of that advantage. He referred to a clause which prevented the Board of Trade reducing the basic price in a case of that sort.

He also pointed out that statutory companies could not increase capital without reference to Parliament, and it was the practice of Parliament to give them capital powers sufficient for periods of only ten, or at the outside fifteen, years, so that they had to come back to Parliament from time to time. Whenever a gas company came to Parliament, the local authorities interested were able to oppose, to ask Parliament to review their conduct and to revise prices.

The precedents, he said, were overwhelmingly in favour of multiple basic prices.

NO COMPLAINTS.

In some of the areas where multiple basic prices were applied, the system had been in operation for about ten years, and in this connection he mentioned Cardiff and Swansea, and added that Windsor and Sheffield had also been subject to the system for nine years. If there had been unsatisfactory results one would have expected to find evidence of that, but the Committee had not been told of a single complaint against the working of the multiple basic price system in those areas.

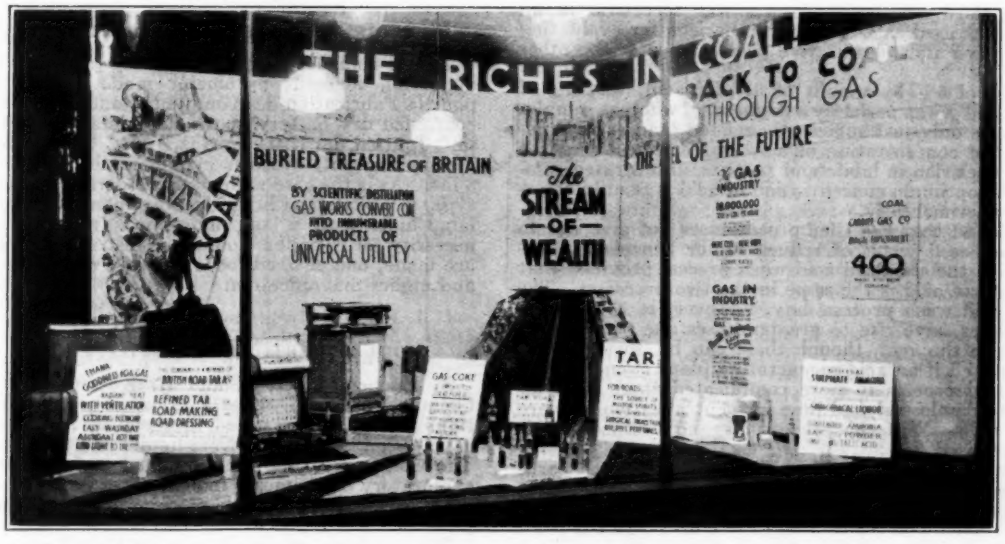
He asked the Committee to consider whether this objection by the Board of Trade was theoretical. He had shown that the basic price system had not resulted in the payment of bigger dividends than had the old sliding scale, to which latter there were grave objections, and that the multiple basic price system did not lead to bigger dividends than the single basic price.

Counsel next drew attention to the importance of the matter from the point of view of the amalgamation of gas undertakings, and said that that movement towards amalgamation of smaller undertakings with larger ones was not going to be discouraged by the Board of Trade. If there were two big companies, operating under the basic price system, each would get a consumers' benefit and could earn extra benefits for the shareholders, the basic prices having been fixed with reference to each company's area alone. A man who held shares in both companies would get full advantage of the economies and reductions of prices in either. It might be that one company had an area in which a bigger consumers' benefit could be earned than could be earned in the other company's area, and if that result was achieved the shareholders would get the advantage from the reduction in price. If, however, the two companies were amalgamated, if there were differential prices (one area being smaller than another), and if separate basic prices were fixed, the shareholders did not lose that benefit. If, on the other hand, a single basic price was fixed for the amalgamated area, and it was provided that in calculating dividends the differential must be ignored, then the shareholders lost the benefit.

A method which had been practised in some cases in this country was to keep the two companies separate and to form a third company—a limited liability company—to acquire and hold the shares of the two. Then the two undertakings could be carried on as separate ones, with the same Board of Directors, and the same engineer for the two. They could then shut down the old works in the smaller areas, enlarge the works in the larger area, and nominally give a supply in bulk from the one company to the other. In those circumstances every improvement effected in the smaller area inured for the benefit of the shareholders of the holding company, and neither the Board of Trade nor Parliament had anything to say as to the terms and conditions of the amalgamation. The National Gas Council did not think that that method of amalgamation was as desirable as the straightforward method by means of a Special Order or Act of Parliament.

[The report of Thursday's proceedings is held over.]

Back to Coal Through Gas


BURIED TREASURE OF BRITAIN
BY SCIENTIFIC DISTILLATION GAS WORKS CONVERT COAL INTO INDISPENSABLE PRODUCTS OF UNIVERSAL UTILITY
The STREAM —OF— WEALTH
TAR
REFINED TAR ROAD MAKING ROAD DRESSING
GAS IN INDUSTRY
400

A window at the Queen Street Showrooms of the Cardiff Gas Light and Coke Company in connection with a recent Engineering Exhibition, showing how Mr. H. D. Madden, Engineer and Manager, interprets the "Back to Coal" idea.

LEGAL INTELLIGENCE

A Coroner's Suggestion at Plymouth.

At Devonport, on Dec. 19, the Coroner conducted an inquiry into the circumstances of the death of a man and his wife as the result of coal gas poisoning.

Evidence was given that over the bed occupied by the couple there was a penny-in-the-slot meter, and the dead woman's daughter said she had often spoken to her mother about an escape of gas in the room. Her mother told her that a man had been there, and, after examination, had said he could not find any leak.

Frederick George Gilbert, Outdoor Superintendent to the Plymouth Corporation Gas Department, said that an examination of the meter revealed an escape.

In the course of his address to the jury, the Coroner made these observations: "This case is a very important one considering the number of consumers of gas in this part of the city. I think that you are probably agreed that the deceased persons were accidentally suffocated owing to a defective meter. The only question arising is whether anything can be done to prevent similar accidents. A point worthy of consideration is whether a man going to a house in respect of a complaint from one tenant might not inquire of the other tenants if they have anything amiss with their gas system. It also seems to me that there should be some scheme whereby old meters might be overhauled from time to time in order to ensure their perfect working order. I know that the City Gas Department is most efficiently administered, and I am not casting the slightest reflection upon anybody in the Department."

In returning a verdict of "Accidental death" the jury added a rider recommending the Corporation to establish a system whereby all gas meters should be examined after they had been in use for twenty years.

Mr. *Frank Blackburn*, Gas Engineer to the Plymouth Corporation, promised that the jury's recommendation would received immediate consideration.

IN CONTINENTAL COUNTRIES - - -

Abstract Translations from the Technical Press of France and Germany.

INVESTIGATIONS OF REFINING PROCESSES FOR MANUFACTURING MOTOR BENZOLE FROM CRUDE BENZOLE.

R. Weller and E. Schramm, in "Brennstoff-Chemie," 1932, 13, 445-447 (Dec. 1) describe investigations carried out by the Benzol-Verband of Bochum on various refining processes and their applicability to benzoles of different origin.

The processes investigated were:

(*a*) The standard acid wash with 66° Bé sulphuric acid.
(*b*) An acid wash with dilute sulphuric acid (80% = 61° Bé).
(*c*) The Ufer process.
(*d*) The Belani process.
(*e*) The Instill process.
(*f*) The hydrogenation process of the A.G. für Steinkohlenverflüssigung und Steinkohlenveredelung.

The following types of crude benzole were investigated:

(1) A standard crude benzole obtained from a coking coal.
(2) A crude benzole derived from a gas coal.
(3) A crude benzole obtained with subnormal carbonizing temperature.
(4) A benzole obtained by a process in which the carbonization vapours were in part withdrawn from the centre of the charge by internal suction.

The standard acid wash process was successful in all cases and was used as a basis of comparison for evaluating the qualitative and quantitative performance of the other processes.

With use of 6% by weight of 61° Bé acid, washing of samples 1 and 4 was perfectly satisfactory, whereas samples 2 and 3 were only just sufficiently refined, and a slight increase in the concentration of acid was desirable. With crude benzoles rich in labile and reactive unsaturated compounds, the optimum concentration of acid is readily ascertainable experimentally.

It was found that the Ufer process does not give rise to greatly increased yields of refined motor benzole in comparison with the standard acid wash process provided that the strength of acid is the same in the two processes. The standard acid wash process may, however, in the case of some benzoles, give rise to greater losses due to occlusion of benzole in the acid, though these can be, for the most part, recovered if an acid-regeneration plant is employed.

The Belani process is more complicated than the Ufer process and employs slaked lime for neutralization in place of caustic soda. With this process, also, no increased yields could be realized.

The Instill process depends on the use of fullers' earth containing ferric sulphate and free sulphuric acid. The refining powers of the medium have been found to be dependent primarily on the content of free acid. In the plant available and with use of the prescribed amount of medium, samples 2, 3, and 4 did not give rise to products stable on storage, though satisfactory results were obtained with sample 1. The Instill process should be applicable to normal types of crude benzole in many cases, but yields are no greater than with the modified acid wash process using weak acid. Where increased yields are obtained it is at the expense of quality.

The hydrogenation process, whether with use of hydrogen or coke oven gas, gave 98% yields of a satisfactory product. Certain qualitative, though not serious, difficulties should be capable of being readily obviated by appropriate means. On an economic basis, the hydrogenation process would appear to be on an equal footing with the modified acid wash process using acid weaker than 66° Bé.

NEW PROCESS OF SULPHURIC ACID MANUFACTURE.

In view of the present difficult situation as regards sulphate of ammonia, interest will not be lacking in a new process for the manufacture of sulphuric acid invented by Prof. Berl and referred to in "Chimie et Industrie," 1932, 28, 1240 (Nov.), by the German correspondent of that journal.

At a pressure of 13 atmospheres and with the assistance of stirring, the efficiency of the lead chamber process has been found to be capable of considerable increase, the result being that a daily make of 187 lbs. of sulphuric acid is realizable per cubic foot of chamber space, as compared with 12 lbs. under existing conditions.

DISAPPEARING FILAMENT PYROMETER.

A very compact and hence readily portable form of disappearing filament pyrometer made by the Compagnie pour la Fabrication des Compteurs, and complete with self-contained dry battery of the flash lamp type, is described in "Journal des Usines à Gaz," 1932, 56, 589-592 (Dec. 5). The instrument, which is cylindrical in form, weighs only 3 lbs. As is the case with many modern instruments of this type, a Wheatstone bridge arrangement is embodied in the lamp unit; hence a lamp unit can be replaced without the necessity for re-calibration of the instrument. Two models are made, one of fixed focus and one with a variable focus and higher magnification.

MOULDED ARTICLES OF UTILITY FROM COAL.

F. Fischer, O. Horn, and H. Küster, in "Brennstoff-Chemie," 1932, 13, 468-472 (Dec. 15), describe investigations which have resulted in the discovery that moulded articles can be obtained from lignite and a tar acid or base. The work has so far been confined mainly to lignite, but exploratory experiments indicate that peat and bituminous coals may also be capable of being employed for the same purpose. Further details in this connection are promised.

The products are analogous to Bakelite save that the formaldehyde is replaced by lignite. Since no catalyst is employed, the products have even better electrical insulating properties than has Bakelite and their resistance

to transverse rupture is comparable with that of Bakelite. They are odourless, but since the combination between the tar acid or base and the lignite is, at least as regards some portion, not very strong, it is possible to remove a portion of the volatile compound from the pulverized mass by steam distillation. The products are border-line materials between true chemical compounds and adsorption compounds.

The lignite is pulverized, dried in vacuo, and treated in a closed, heated kneading machine with the optimum quantity of reagent (*e.g.*, 12% of cresol) dissolved in a solvent of low boiling point. Kneading is effected for several hours at 80° C., whereupon the lignite at first swells to more than twice its original volumes, and swelling subsequently ceases. The solvent is removed in vacuo and the product is ready for moulding, suitable pressures being 2 tons and upwards per square inch at a temperature of about 150° C. The moulded articles can be sawn, turned, drilled, and polished, and are resistant to atmospheric conditions. The cost of the raw materials is only one-tenth that of the cost of the raw materials required for Bakelite.

THE GAS LIGHT AND COKE : : COMPANY IN ESSEX : :

Extension of Sales and Service Facilities in Brentwood

Following close upon the heels of the installation of gas supply by the Gas Light and Coke Company, which is creeping steadily forward across the county of Essex, comes the extension in each township *en route* of the Company's sales and service facilities by the opening of well-equipped and up-to-date showrooms, offices, stores, and service centres for the convenience of their consumers.

Though the town of Brentwood has had the advantage of a gas supply for many years from the old Brentwood Gas Company, nevertheless, upon acquiring this undertaking, the Gas Light and Coke Company have straightway set about the task of modernizing the showroom facilities; and Tuesday, Dec. 20, saw the official opening by the Chairman of the local District Council of very fine premises in the main street of the town.

Brentwood is a place which can look back on a distinguished past, and, at the same time, look forward to a progressive future. It is growing as a pleasant, well-planned area; but it is no mushroom growth. In all ages Brentwood has been up-to-date, and that is the reason why the Gas Light and Coke Company have re-constructed and enlarged the showrooms at 105, High Street.

The Opening Ceremony.

Prior to the opening ceremony, tea was served at the kind invitation of the Gas Light and Coke Company in the Town Hall, opposite the new showrooms, when a representative gathering of prominent local residents was welcomed by Sir David Milne-Watson, Governor of the Company, who was supported by Mr. R. W. Foot (General Manager), Mr. Thomas Hardie (Chief Engineer), Mr. Stephen Lacey (Controller of Gas Sales), Mr. A. P. Ryan (Publicity Manager), and other senior members of the Company's Sales staff.

Sir David Milne-Watson, in extending a hearty welcome to all those present, thanked them on behalf of the Directors of the Company for the honour they had done the Company in coming as their guests to the opening ceremony of the new showrooms. They had taken over the Brentwood district a little over a year ago, and since then they had been bringing it into line with the traditions of the Gas Light and Coke Company; and one of their first considerations had been to make the showrooms thoroughly up-to-date. This was their policy everywhere they went. They believed that they were carrying out a great public service in supplying good gas. Of course, they did not have the smoke problem in places like Brentwood that they experienced in London; but when their district increased in size they would be glad there was a fuel like gas to keep Essex a clean county. The showrooms they were opening that day were not entirely new, for they had found all they wanted in the original main building; but, with the assistance of their architect, Mr. Walter Tapper, they had remodelled it and brought it up to date.

A Great Co-Partnership Concern.

The Company were there, continued Sir David, to render the best service, and consumers would find the staff anxious to do everything in their power to assist them. They were a great co-partnership concern, with something like 17,000 employees in their co-partnership scheme, with a financial interest in the Company amounting to about a million pounds—which gave them a very solid interest in their work. They had made special efforts, added Sir David, to open the new showrooms before Christmas, in order that the premises should not be a "blank" in the High Street during the festive season.

Sir David Milne-Watson then handed a key to the Chairman of the Urban District Council with which to open the new building.

Capt. E. Grahame Stone, J.P. (Chairman of the Brentwood U.D.C.), said that it gave him much pleasure to be associated with the function that afternoon, indicating as it did the presence in their midst of a very enterprising Company and showing the further progress of their town. During the past ten years the whole place had undergone re-organization. They were well served by the old Brentwood Gas Company, but they appreciated that, with their limited financial resources, it was impossible to give the service which the Gas Light and Coke Company could render. They were sensible of the great improvements which this Company would bring to their district with the vast experience of their technical experts. He was very pleased to hear of the co-partnership scheme, and he welcomed the Company to Brentwood, remarking that it would give him great pleasure to open the new showrooms, and he wished them every success.

Those present then crossed the road to the showrooms, and Capt. Grahame Stone officially opened the building, after which an inspection of the premises was made.

The Showrooms.

The Brentwood showrooms are designed upon the general lines now familiar throughout the Gas Light and Coke Company's area of supply, with the open type of window, giving to those in the street a clear view into the interior, which is finished in an attractive decoration scheme, with a wide range of domestic cooking, heating, and lighting equipment tastefully displayed, most of the appliances being connected up for demonstration purposes.

A section of the window, however, is "closed," and in this is set out the coloured fire display, which is proving so popular and is to be seen in all the showrooms of the Company.

Various types of gas fires in attractive finishes and set in appropriate harmonizing surrounds are prominently displayed in the showroom, together with a wide range of cookers of different sizes, in enamel finishes. A Kempton "Kaye" type coke fire in chromium finish, and complete with gas ignition device, provides cheerful warmth for the showroom, and consumes the Company's "Cleanglow" smokeless fuel. A special section is devoted to a comprehensive selection of water heating equipment. In this section also are wash-boilers, complete with wringers, and a gas-heated clothes-airing cupboard, gas irons, &c.

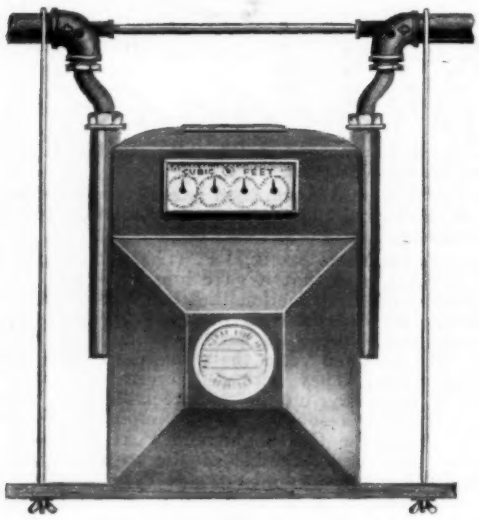
A special feature is made of portable gas heating equipment, a large number of small appliances, including those of the bowl and screen type, being exhibited, all complete with plug-in bayonet attachments connected to a row of chromium-plated plugs set in the wall. This is a very interesting display, and should do much to draw the public's attention to the many advantages of gas heating in this direction.

The lighting of the showroom is up to the usual high standard, with a wide range of attractive fittings prominently displayed, a full measure of attention being directed to distance control for domestic lighting. A counter is provided for the payment of accounts, while upstairs are the offices of the district staff.

NOTES ON PLANT AND PROCESSES

The Crane Meter Connection.

A new meter bar marketed by Messrs. Crane, Ltd., 45-51, Leman Street, London, E. 1, has been developed to provide the gas engineer with a speedy method of installing any standard make of meter without external supports, brackets, or fixing, and to dispense with lead pipe connections and the accompanying expense. The meter connection provides standard practice, and its adoption will be found a means of economy that gives a more rigid, more efficient, and less costly installation.



This meter bar has been designed to give the meter a workmanlike finish with quick installation. The cost is much less than the usual lead pipe, sundries, brackets, &c., while the saving on the plumbers' tools dispensed with is important. To change a meter connected to one of these meter bars is a simple matter whether it be the same or a different size.

A set of parts required for the installation of each size of meter is boxed and labelled with the size of meter they suit. The fitter has only to requisition for a meter connection, stating the size of meter, and he can be supplied with a set of parts to correspond.

The complete meter connection is of British manufacture throughout, and is suitable for the range of meters used mostly on domestic services as follows:

Set No.	Meters.		
1	3-light	2-S.D.	80 c.ft. per hour, H.C.
2	5-light	3-S.D.	120 ,, ,, ,,
3	10-light	4-S.D.	240 ,, ,, ,,
4			

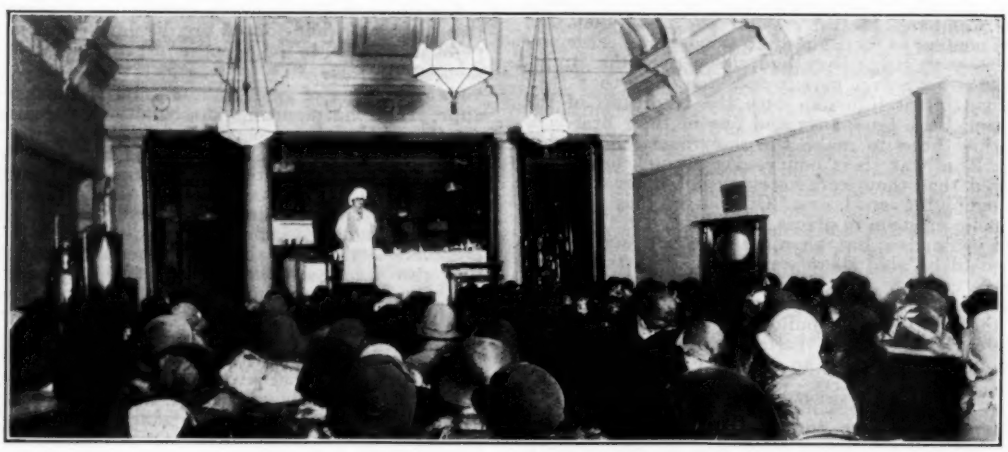
Progress in Wash-Boiler Manufacture.

During the past twelve months the Economic Gas Boiler Company, Ltd., of Burnley, have made considerable progress. Many new patterns have been added to their comprehensive list, and the innovation of the "Economic" washing machine, comprising table, wringer, washer, and gas boiler, has been a marked success. The demand for this appliance has far and away exceeded anticipations.

Boiler patterns listed as Nos. 13, 14, and 15 have met the varying demands. Pattern No. 13 includes a galvanized corrugated case with polished pressed aluminium top rim, having a circular copper or wooden lid. Pattern No. 14 has a grey mottled porcelain enamelled casing—very similar to the No. 12 already well known, except that the No. 14 includes a polished pressed aluminium top rim. Pattern No. 15 is still another grey mottled porcelain enamelled design added to their list, this design having a polished pressed aluminium top rim with circular copper or wooden lid.

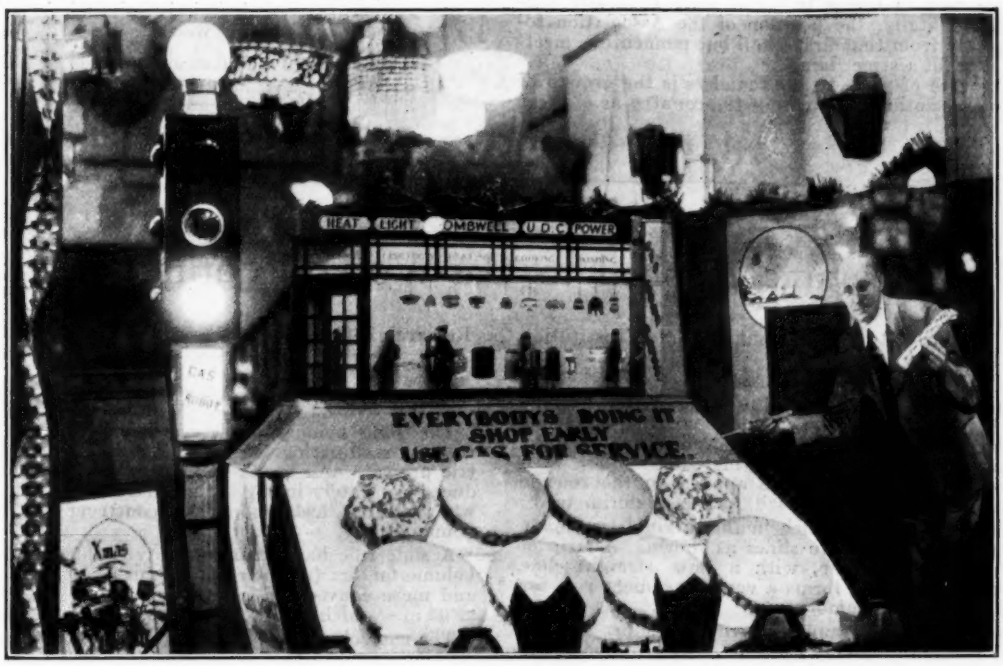
The firm await the coming year with confidence, believing that its advent will herald still greater progress.

Cookery Demonstrations at Edinburgh



A highly successful two weeks' series of cookery demonstrations has been held in the Edinburgh Gas Department's Showroom at 41, George Street. The Demonstrator was Miss H. Crawford-Fox, M.C.A., of the Parkinson Stove Company, whose "New Suburbia" cookers were used throughout the demonstrations. Very large audiences attended during the fortnight, and, in addition to complete meals cooked at one setting of the "Ajusto" automatic control, the menus were nicely varied with Christmas recipes. Great interest was shown in the fact that a full course meal was cooked at a cost of gas slightly exceeding 1*d.*

Gas Robot in Showroom Window



This photograph is of the Christmas Showroom Window Display of the Wombwell Gas Department. Mr. E. J. Wellens, the Engineer and Manager, informs us that the Gas Robot worked most satisfactorily, with flashes at intervals of 15 seconds. The figures on the model showroom move, and the photograph shows them entering the showroom at the side. The bowls were set in a glass base with 2-light burners underneath. Both the Robot and the Model Showroom were made by employees of the Gas Department.

The Manchester "Juniors"*

Pioneers of the Junior Gas Association Movement

The story of the Manchester and District Junior Gas Association covers a period of nearly forty years, beginning at a time before classes of instruction in Gas Engineering were available to the young men of the Industry. This deficiency led Mr. Wellens, of the Middleton Gas-Works, to make representations to the principals of the Manchester and Salford Technical Schools, which resulted in a class being formed in 1897 under the tutorship of Mr. Ashworth, then Chief Draughtsman to the Manchester Corporation Gas Department. The class was held in the old Princess Street premises of the Manchester College of Technology, and about forty students were enrolled.

Almost immediately, Mr. Wellens suggested a new development, whereby the utmost benefit could be derived from the lectures. This was that the students should form themselves into a small society, whose members could assemble periodically and indulge in full and free discussion of the questions which arose in class. Nothing came of this proposal during the first session, but in 1898 it was revived, and one historic evening the interested students held an impromptu meeting after class, gathered around a street lamp standard outside the college building. A hurried consultation produced a unanimous vote in favour of going ahead with the movement, and the party of pioneers sought the hospitality of the Y.M.C.A., who, upon learning their errand, gladly put a room at their disposal. Here the first Committee was elected, with Mr. Wellens and Mr. Stoddart as Joint Secretaries, Mr. Mitchell as Treasurer, and Mr. Haynes, of Stretford, as President. The founders were Messrs. E. J. Wellens, F. Oldfield, S. Halliwell, R. H. Garlick, R. B. Braddock, R. T. Stoddart, H. V. Mitchell, A. Hodgson, W. Hill, H. Smith, J. Wareham, and B. S. Haynes. The name originally suggested was the Gas Students' Association, but this was later altered to the title now existing.

For ten years the Association held periodical meetings in the College of Technology, which remained its headquarters for some time after it was transferred to the new building in Whitworth Street. In 1909 the idea of establishing a closer union with Manchester University was put forward. It was suggested that steps be taken to arrange four lectures a year, to be presented at the University by some of the most able men in the gas profession. Various considerations commended this move to a number of the members, and eventually it was accomplished. The cost of the lectures was met by contributions from the Association and from the "Seniors" (then the Manchester Institution of Gas Engineers), as well as from the gas undertakings of Salford, St. Helens, Altrincham, Stockport, Stretford, Manchester, Warrington, Littleborough, and Mossley, and they were carried on until 1915, when the war caused a break in the activities of the Association.

The attitude of the Seniors to the Association in its early days was a rather detached one, as witness their reception of a deputation which waited upon their Committee to acquaint them with the new movement and to solicit help and encouragement. The writer advanced the plea that, in the interests of the Gas Industry generally, the benefit of the Seniors' advice should be granted to members if, and when, they were confronted with problems beyond their capacity. This, I concluded, would help to equip us to meet the growing electrical competition, and to act promptly if we found our profession in jeopardy.

The Chairman replied that it was news to his Committee that the gas profession was in jeopardy, and gently suggested that a body of young men possessed of such a ready fund of ideas for the betterment of the Industry were surely not in need of outside assistance. Our deputation made a graceful retirement. Happily, valuable help in many directions was afterwards forthcoming from this unpromising source.

When our Association resumed operations in 1917 it was found unnecessary to hold meetings at a definite centre, as papers could be read on the works to which visits were made. Since the area covered by the Manchester and District Junior Gas Association now includes the whole of Lancashire and Cheshire, as well as parts of Derbyshire and

* From "West's Gas."

Staffordshire, and its membership numbers 277 as compared with the twenty reported at the first annual meeting, it will be appreciated that much expense was entailed in travelling to Manchester for each reading of a paper, and the practice now in vogue is found more generally convenient. Incidentally, the position of the Association today is a far cry from that first small but momentous meeting in the glow of a street lamp.

Another source of pride to the founders is the growth of Junior Gas Associations throughout the country as a direct result of the Manchester venture. The dates given below show how they have sprung up in our wake:

Junior Gas Association.	Date of Formation.
Manchester and District	1898
London	1902
Yorkshire	1903
Scottish (Eastern and Western)	1904
Midland	1905
Wales and Monmouthshire	1922
Western	1926

R. G. H.

Slide Nomograms Applied to Gas-Works Routine Calculations

By T. H. Blakeley, B.Sc. (Institution Gas Research Fellow, University of Leeds).

In "Engineering," Aug. 12, 1932, the writer has described a modification of the usual nomogram, in which the principle of the slide rule is introduced to facilitate the handling of expressions containing more than three variables. The same method is here applied to the routine determination of calorific value with a Boys calorimeter.

Fig. 1 shows the chart, which in the original was made of stout cardboard, with two slides as shown. A strip of celluloid about 2 in. wide, with a thin straight line scratched down the back, forms a very convenient rule for use with this and other nomograms.

When using the nomogram, set arrow *a* against the log. gas volume factor by moving the slide. Alternatively, the meter temperature may be set against the barometric pressure; this, as explained later, is slightly less accurate than using the log. gas volume factor, but has the advantage of eliminating the use of tables, and is justified in this case, for the error involved is less than the error in reading calorific value. Arrow *b* is similarly set to the temperature of the water collected. The rule is placed across the observed values of water volume and observed temperature rise, and the required value read where the centre scale is intercepted.

In Fig. 1, the slides are shown in position for working the following example: Temperature rise (corrected), 20·51° C.; water collected, 1978 c.c. (at 39·7° C.); barometer, 29·80 in.; meter temperature, 69° F. (log. gas volume factor, 0·0133; effluent gas temperature, 76·5° F.; air temperature, 71·5° F.

Set 69° F. opposite 29·80 in. (or arrow *a* against 0·0133). Set arrow *b* against 39·7° C. Place the rule across 20·51° C. and 1·978 litres, and read 498 on the calorific value scale. To this add 0·4. (76·5 − 71·5) = 2·0, to give 500 B.Th.U. for the calorific value. The scale can be read to about 1 B.Th.U., which is often sufficiently accurate.

The use of slides with nomograms has many advantages. In theory and in use, slide nomograms are simpler than the usual form for expressions containing products of more than three variables. The final reading—in this case, calorific value—is likely to have a smaller error than when numerous settings of the rule are required. Moreover, every operation can be individually checked at a glance if any gross error is suspected. Against these advantages is to be counted a little labour with knife, paste, and cardboard.

For an example of calculation required for slide nomograms such as this, reference should be made to "Engineering," where Unwin's formula for the high-pressure distribution of gas in pipes is considered—an example likely to be of interest to gas engineers. Without burdening this article with the calculations used in the present example, the following data, sufficient for the construction of a similar chart, are given. The expression "log. unit" is used for the length which would be occupied on the scales by the range 1 to 10, or 10 to 100.

Temperature rise and water collected	100 cm. per log. unit
Calorific value	50 cm. per log. unit

The calorific value scale is midway between the scales of temperature rise and water collected. All three scales are parallel, and parallel to the edges of the slides.

Log. gas volume factor	10 cm. per unit. of log. G.V.F.

This scale, and those of meter temperature and barometric pressure, are obtained from those given below for the slide rule by multiplying the graduations there given by 3-tenths —*e.g.*, 28 in. to 31 in. here occupies 4·5 cm., and on the slide rule 15 cm.

Slide Rule for Reading Log. Gas Volume Factors.

The slide nomogram described above includes a slide rule for reading log. gas volume factors from the barometric pressure and meter temperature. This part is reproduced separately in Fig. 2, and may be of interest to some who will not feel inclined to construct the whole slide nomogram.

A slide rule has advantages over tables for reading gas volume factors (or their logarithms). It is more compact, and more convenient for reading values—*e.g.*, 55° F. and 29·05 in.—which have to be interpolated in tables.

The gas volume factor is connected with barometric pressure and meter temperature by the relation $V = \frac{459{\cdot}4 + t}{17{\cdot}617\,(h - a)}$ (see the General Notification of the Gas Referees). This expression cannot be treated with perfect exactitude by a slide rule, or, what is really the same thing, by a nomogram employing parallel scales; it is necessary to have one scale of the nomogram curved (see Bagg, "Gas Journal," 1931, Vol. 196, p. 731). Over the range of values likely to be used in gas calorimetry, however, the error in using a slide rule is small, with a maximum in the present case of about 0·0003 on the log. gas volume factor, equivalent to 0·1%, or 0·5 B.Th.U. on 500 B.Th.U. gas.

To read log. gas volume factors, the meter temperature is set against the barometric pressure, and the required value read opposite the arrow. The final scale can, if desired, be graduated with gas volume factors instead of the corresponding logarithms, or with tabular numbers, but the log. graduation has been chosen as more generally useful.

The scales employed are:

Meter, °F.	40	45	50	55	60	65	70	75	80
Cm.	0·00	1·68	3·43	5·19	6·99	8·86	10·84	12·85	15·00

Barometer, In.	28	28·5	29	29·5	30	30·5	31
Cm.	0·00	2·58	5·15	7·68	10·15	12·60	15·00

Log. G.V.F.	1·97	1·98	1·99	0·00	0·01	0·02	0·03	0·04
Cm.	0·00	3·32	6·65	9·98	13·31	16·63	19·98	23·30

The last scale is linear—*i.e.*, uniformly divided—and the 0·001 graduations are easily filled in. The other scales are not linear, but it is sufficiently accurate to fill in the graduations by dividing the spaces into five equal parts. When the scales have been marked, the slide rule is completed by setting 60° F. against 30 in., and putting an arrow on the slide opposite 0·0000 on the log. gas volume scale.

If factors are also required for correcting to other conditions—*e.g.*, 60° F. dry, or N.T.P., provision is easily made for this by additional arrows on the slide. Thus, for correcting to 60° F. dry, a second arrow is marked on the slide opposite 0·0076 when the original arrow is at 0·0000.

The author has attempted to be as explicit as possible in his explanation of the nomogram and slide rule, but will be pleased to answer any questions arising out of it which offer difficulty to a reader.

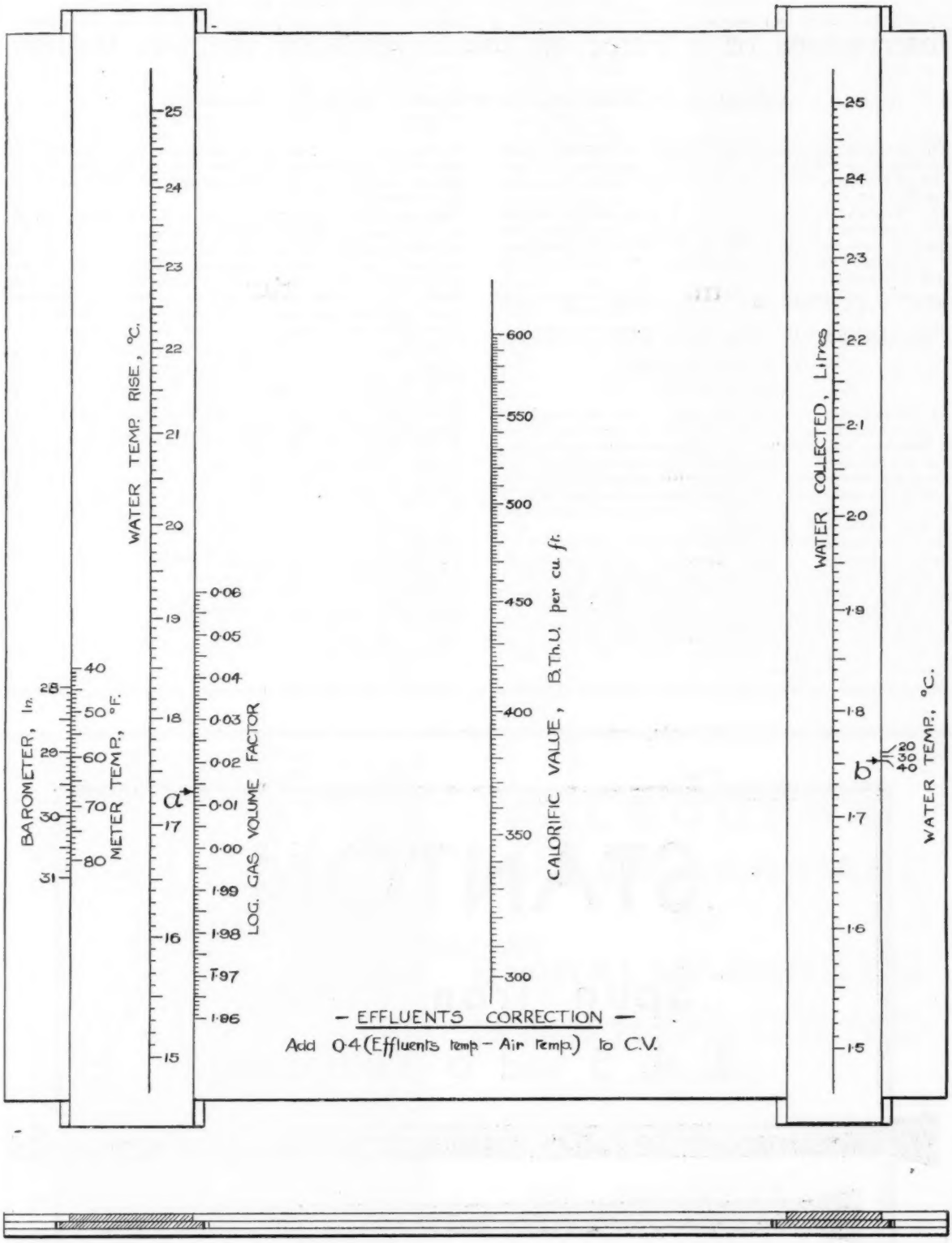

BAROMETER, In.
METER TEMP., °F.
WATER TEMP. RISE, °C.
LOG. GAS VOLUME FACTOR
CALORIFIC VALUE, B.Th.U. per cu. ft.
WATER COLLECTED, Litres
WATER TEMP., °C.
a
b
— EFFLUENTS CORRECTION —
Add 0·4 (Effluents temp. − Air temp.) to C.V.

Fig. 1.

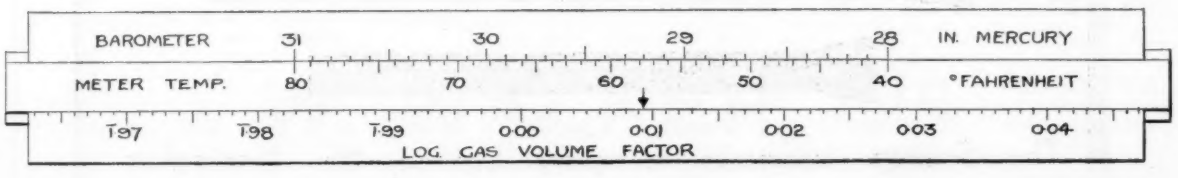

BAROMETER
31
30
29
28
IN. MERCURY
METER TEMP.
80
70
60
50
40
°FAHRENHEIT
T·97
T·98
T·99
0·00
0·01
0·02
0·03
0·04
LOG. GAS VOLUME FACTOR

Fig. 2.

Observations of a Fitter on the Progress of the Gas Industry

Meeting of the Wales and Monmouthshire Junior Gas Association

The December Meeting of the Wales and Monmouthshire Junion Gas Association was held at Pontypridd at the invitation of the Chairman of the Gas Department, Councillor Evan Morgan.

The President (Mr. C. S. Thane, of Newport) was in the chair, supported by Councillor Morgan, Mr. David Muir (Engineer and Manager), Mr. E. W. Edwards (Engineer and Manager, Port Talbot and Aberavon), and Mr. C. B. Felton (Newport).

OBSERVATIONS OF A FITTER ON THE PROGRESS OF THE GAS INDUSTRY.

By W. J. Viney (Cardiff).

[Extract.]

At present only a small fraction of the employees of gas undertakings are enrolled in the Junior Associations and Salesmen's Circles. I see no reason why the various social organizations could not inaugurate a debating class in their winter schedule, even arranging inter-town debates, if necessary, incorporating all sections of the Industry. I feel sure that many suggestions arising therefrom would commend themselves for adoption.

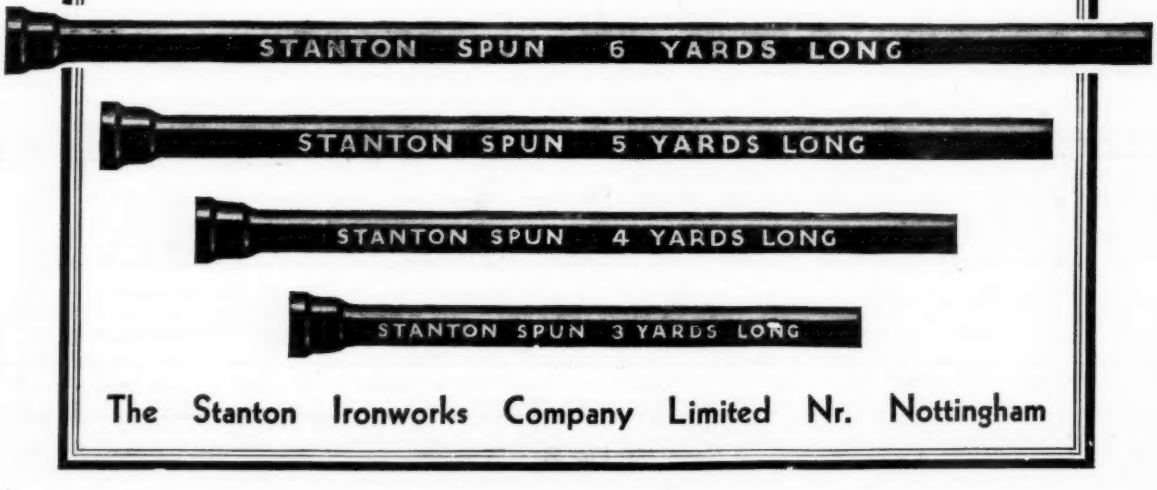
Modern housing has increased the need for gas in all domestic activities. Builders have been encouraged to carcass their houses with points for fires, cookers, and boilers, thus eliminating the need for disfiguring walls, &c., when extra appliances are required. Tiled scullerie̊s and tiled surround fireplaces call for more artistic gas appliances to grace them, and manufacturers have added their quota of support in laying out capital for plant, &c., to meet present-day requirements.

We may not have progressed as we would wish in domestic lighting so far as new consumers are concerned, but quality and efficiency are being maintained, and new and artistic fittings for wall and semi-indirect lights continue to find a steady market.

Medical science is doing much research work with heat rays for the benefit of humanity, surely, then, we who profess to manufacture nature's nearest substitute for light and heat can produce an appliance capable of throwing out these rays. Very few houses to-day have a coal range fitted. Even in the larger ones, gas cookers have displaced them, and in some cases of old-type large houses two or three gas cookers take the place of the old range.

The modern gas cooker is now an article of beauty and utility. During the past five years great progress has been made in their manufacture. The plain iron cooker which we have handled for half a century will be a relic in a few years' time. The drudgery of black leading or periodical painting has been abolished; a damp cloth, while a cooker is still warm, will effectively clean the present enamelled cooker. Most makers have now adopted thermostatic control on some of their models, and also easy out-of-the-way hotplate taps. Here I should especially like to mention the "Vertico" tap, with its dual control of calorific value and pressure, which eliminates the necessity for air adjusters. This is a great advance, as it has considerably curtailed the number of cooker complaints, a large percentage of which in the past have been due to incorrect air adjustment caused either by deposits of dust around the air chamber or by accidental movement of the adjusters when cookers are dismantled for cleaning purposes. Another boon is the gateless oven, and all practical men strongly advocate the abolition of oven gates, which have been, and still are, a source of endless annoyance and expense to consumers and gas undertakings alike. Iron gates

STANTON
DELAVAUD
Spun Iron Pipes
3, 4, 5 and 6 Yards Long



The Stanton Ironworks Company Limited Nr. Nottingham

rust and burn away quickly, and the rusty deposits are often to be found on the food being cooked. All methods of rectifying the nuisance have proved ineffective. Cookers with enamelled gates have also proved somewhat of a failure, the thickness of the metal not being sufficient for the number of angles and crevices required, resulting in the enamel wearing and chipping, thus creating an even more unsatisfactory state of affairs. The provision for connecting up cookers is another fault which may be rectified. Wrought and cast iron threads together do not tend to make a good joint, and even where the connecting piece is supplied with the cooker, and threads are probably standard, great difficulty is experienced in making a gas-tight joint.

If the threads are first run up before being treated with white lead or compound, much of this trouble will be avoided, as the dry hard paint put on at the factory is thus removed, allowing the jointing material to bed in and not peel off. Overstrain results in a broken rail casting. The single back burner oven is certainly a step in the right direction, the bottom flue outlet making the cooker much cleaner in operation. Fitters should be given facilities to obtain first-hand knowledge of all new apparatus before it is sent out on the district.

Gas fires have probably had more to do with stabilizing the Industry than have cookers. Far from being a luxury, the gas fire to-day is looked upon as a necessity. The wonderful improvement made in design, construction, and efficiency have made it the friend of the discerning modern housewife.

Flueless heaters are also proving a boon in the house, and to-day we have a wide range of suitable small heaters, some being of the portable type which can be carried from one room to another.

One of the latest fires is the " Panella," and is specially recommended where provision can be made during the construction of the house, or when the grate is being renewed, for the connection to be placed behind the fire, leaving no tap or connection visible when the fire is in position.

" Nautilus " flues may also be incorporated in house construction, as they can be built into single brick walls, dispensing with inside breasts or outside abutments, saving space material and labour, and therefore reducing buildings costs considerably.

The majority of modern fires are fitted with gas injectors similar in design to the " Vertico " tap previously referred to, the dual control screws dispensing with air adjusters, while the new " pepper box " type of burner nozzle has resulted in silent burning and increased efficiency. The need for good appearance of appliances is a growing one.

In the steady advance, the gas steam radiator has had to make way for the more up-to-date hot air radiator and panel heater, both types being well constructed, pleasing in design, and very economical in running costs—and the maintenance cost is considerably reduced. I should, however, like to point out one drawback in regard to the new burner nozzle fitted to gas fires. It tends to become choked with particles of fluff and dust, this being particularly noticeable in bedrooms. Excessive up-draught increases this danger considerably, as the fire becomes sluggish and " lights back," requiring the services of a fitter frequently.

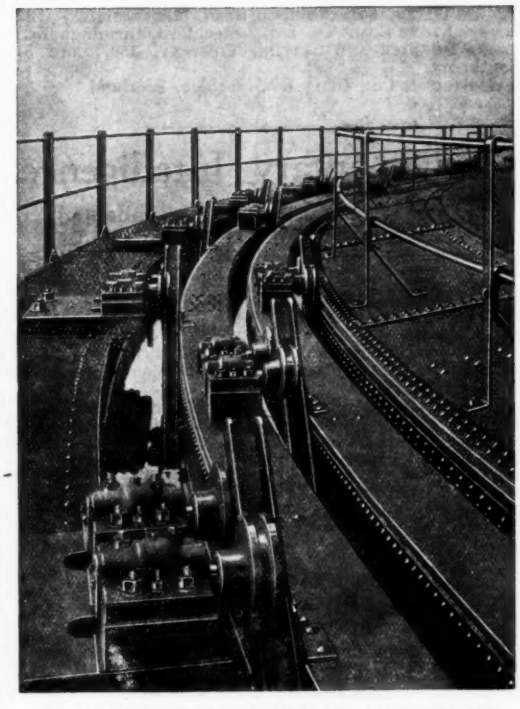
Domestic water heaters should be our greatest source of revenue if they could be purchased more cheaply, and improved upon to become more economical in use. Although advances are being made in this direction, and the demand is correspondingly on the increase, they still remain too expensive for the average prospective consumer.

Vote of Thanks.

On the proposition of Mr. C. B. Felton, seconded by Mr. H. V. Williams, the Pontypridd Gas Department, Mr. Evan Morgan, and Mr. David Muir were heartily thanked for their kindness in making the arrangements for a successful meeting.

Visit to a Power Station.

Prior to the meeting, members visited the Upper Boat Works of the South Wales Power Company, when the staff conducted them round. On the motion of the President, Mr. C .T. Allan, Assistant Manager of the Power Company, and his staff were thanked for arranging a most interesting visit.



AS APPLIED TO A 2,000,000 C.FT. GASHOLDER AT SWANSEA.

THE
MILBOURNE
ROLLER CARRIAGE
FOR
SPIRALLY-GUIDED
GASHOLDERS
PROVIDES
CONTINUOUS & AUTOMATIC
OIL LUBRICATION.
A BOON
IN SEVERE WEATHER.

C. & W. WALKER, LTD.
DONNINGTON, Nr. WELLINGTON, SHROPSHIRE.
LONDON OFFICE: 70, VICTORIA STREET, WESTMINSTER, S.W. 1.

GAS MARKETS & MANUFACTURES

Stock Market Report.

[For Stock and Share List, see later page.]

The Stock Exchange closed for the holiday on Friday last on a note of cheerfulness with regard to the future. Prices in nearly all sections finished firm, and business for the time of year was heavier than expected. The chief item of interest centred round the demand for leading industrials, especially coal and iron shares, and even Home railways came in for some attention. There is, in fact, an all-round spirit of optimism, and, given some relief from the heavy burden of taxation, the belief exists that a large part of our present depression will quickly give way to brighter conditions.

The Gas Market was no exception to the general tone. Business was unusually brisk, and prices remained firm. There were the usual half-year *ex* interest reductions affecting a number of debenture issues, otherwise the only changes were appreciations. Gas Light and Newcastle units strengthened 3d. and 6d. respectively, and it is interesting to note that since Jan. 1 both these stocks have improved 7s., or 35%. Inquiries for Commercial ordinary led to a sharp rise of 6 points to 112½, while a demand on the local Exchange for Newcastle 4% preference brought about a gain of 2½ points to 94½.

Current Sales of Gas Products.

The London Market for Tar Products.

LONDON, *Dec.* 28.

There are no changes to report in the prices of tar products, which remain as follows:

Pitch is firm at 100s. per ton f.o.b.

Creosote is 3½d. to 5d. per gallon f.o.b., according to specification.

Refined tar is about 4½d. per gallon in bulk at makers' works.

Pure toluole is about 2s. 5d.; pure benzole, about 1s. 11d. to 2s.; 95/160 solvent naphtha, about 1s. 8d.; and 90/140 pyridine bases, 3s. 9d. to 4s.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Dec. 28.

The average prices of gas-works products during the week were: Gas-works tar, 33s. to 38s. Pitch—East Coast, 85s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 85s. f.o.b.* Toluole, naked, North, 1s. 7½d. to 1s. 9d. Coal-tar crude naphtha, in bulk, North, 5½d. to 5⅝d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 4½d. Heavy naphtha, North, 10½d. to 11d. Creosote, *ex* works, in bulk, North, liquid and salty, 2¼d. to 2¾d.; low gravity, 1¼d.; Scotland, 2¼d. to 2¾d. Heavy oils, in bulk, North, 4¾d. to 5¼d. Carbolic acid, 60's, 1s. 6½d. to 1s. 7d. Naphthalene, £9 to £10. Salts, 55s. to 75s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Dec.* 23.

Very few orders are being placed, but prices remain fairly steady.

Crude gas-works tar.—The actual value is 45s. to 50s. per ton *ex* works.

Pitch.—Export value remains unchanged at 92s. 6d. to 95s. per ton f.o.b. Glasgow. The price for home delivery is 95s. to 100s. per ton *ex* works, according to quality.

Refined tar to Ministry of Transport Specification is easier if anything, but quotations remain at 3¾d. to 4d. per gallon f.o.r. naked.

Creosote oil.—Production exceeds demand and prices are easy. B.E.S.A. Specification is 3d. to 3½d. per gallon; low gravity, 2¾d. to 3⅛d. per gallon; and neutral oil, 3d. to 3½d. per gallon—all *ex* works in bulk.

Cresylic acid remains very weak. Pale, 97/99%, is 11d. to 1s. per gallon; dark, 97/99%, 10d. to 11d. per gallon; and pale, 99/100%, 1s. 2d. to 1s. 3d. per gallon—all f.o.r. in buyers' packages.

Crude naphtha.—Quotations are steady at 4½d. to 5d. per gallon f.o.r., according to quantity and quality.

Solvent naphtha.—90/160 grade is 1s. 2d. to 1s. 3d. per gallon and 90/190 grade 11d. to 1s. per gallon.

Motor benzole is not too plentiful for prompt delivery, and value is steady at 1s. 4d. to 1s. 5d. per gallon *ex* works.

Pyridines.—90/160 grade is 3s. to 3s. 3d. per gallon, and 90/140 grade 3s. 3d. to 3s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time.

	s. d.		s. d.	
Crude benzole	0 10½	to	0 11	per gallon at works
Motor ,, ...	1 6½	,,	1 7	,, ,, ,,
Pure ,, ...	1 10	,,	1 11	,, ,, ,,

Contracts Advertised To-Day.

Gas Oil.

The Gas Committee of the Mansfield Corporation invite tenders for the supply of gas oil. [Advert. on p. 868.]

Trade Notes.

Change of Title.

The name of the National Gas Engine Company, Ltd., has been changed to the National Gas and Oil Engine Company, Ltd., this being being more indicative of the firm's productions.

Diaries, Calendars, &c.

Further seasonable gifts in the form of diaries, calendars, &c., have been received from the following friends, whose good wishes we heartily reciprocate:

ALDER & MACKAY, LTD., Edinburgh.
R. & J. DEMPSTER, LTD., Oldham Road, Manchester.
PARKINSON STOVE COMPANY, LTD., Stechford, Birmingham.
STANDARD FURNACE AND SETTING COMPANY, 150, Lord Street, Southport.
JOHN G. STEIN & CO., LTD., Bonnybridge, Scotland.

Parliamentary Intelligence.

[From Our Special Correspondents.]

House of Lords.

Special Orders.

The following Special Orders, having been reported from the Special Orders Committee, have been approved by the House: Buxton; Hampton Court; Coatbridge; Weymouth; Liverpool (with additions); Grantham (with a modification). The Committee reported that the Grantham Order contained departures from precedent.

A petition has been deposited by Messrs. Sherwood & Co., on behalf of the Hertfordshire County Council, against the Watford and St. Albans Order, and the Committee has adjourned until after the Christmas recess.

Joint Committee on Basic Prices.

The Committee has presented a report with Minutes of Evidence, which have been ordered to lie upon the Table and to be printed.

House of Commons.

Special Order.

Plans have been deposited in connection with the Northampton Gas Order.

Coal Gas for Motor Vehicles.

Mr. LOGAN (for Mr. Thorne) asked the Minister of Transport if he had any information as to the number of motor vehicles fitted with gas engines, and as to the running cost on this fuel per 100 miles.

Sir A. BAILLIE asked the Minister of Transport whether he was in a position to give any information in regard to the new method of running commercial motor vehicles on coal gas instead of petrol.

Mr. PYBUS, in reply, said that he was watching with interest the experiments which were now being carried on in the use of coal gas instead of petrol in heavy motor vehicles, but it was not possible for him to give the figures asked for.

STOCK AND SHARE LIST.

Official Quotations on the London and Provincial Stock Exchanges.

[For Stock Market Report, see earlier pages.]

Issue	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations Dec. 23.	Rise or Fall on Week.	Transactions. Lowest and Highest Prices During the Week.
£			% p.a.	% p.a.				
1,551,868	Stk.	Oct. 3	7½	7½	Alliance & Dublin Ord. ...	105—115	...	...
374,000	,,	July 4	4	4	Do. 4 p.c. Deb. ...	80—90	...	...
557,655	,,	Aug. 22	7	7	Barnet Ord. 7 p.c.	132—142	...	142—143
300,000	1	Oct. 17	1/9⅜	1/4⅜	Bombay, Ltd.	21/6—23/6	...	23/6
177,750	Stk.	Aug. 22	9	9½	Bournemouth sliding scale	195—205	...	...
550,050	,,	,,	7	7	Do. 7 p.c. max. ...	145—155	...	...
489,160	,,	,,	6	6	Do. 6 p.c. Pref. ...	135—140	...	...
50,000	,,	Dec. 19	3	3	Do. 3 p.c. Deb. ...	75—80*	...	...
162,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	98—103*	−2	100—101
210,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	117—122*	−3	...
357,900	,,	Aug. 22	7½	7½	Brighton, &c. 6 p.c. Con. ...	142—147	...	145
540,000	,,	,,	6½	6½	Do. 5 p.c. Con. ...	127—132	...	...
195,500	,,	,,	6	6	Do. 6 p.c. B Pref.	135—145	...	...
1,287,500	,,	Aug. 8	5	5	Bristol 5 p.c. max.	108—110[a]	...	...
120,420	,,	Dec. 19	4	4	Do. 1st 4 p.c. Deb. ...	96—98[a]	−½	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	95—97[a]	−½	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	115—120[a]*	...	...
855,000	,,	Oct. 3	8	7	British Ord.	142—147	...	144½—146½
100,000	,,	Dec. 19	7	7	Do. 7 p.c. Pref.	140—150*	...	...
350,000	,,	,,	—	5½	Do. 5½ p.c. Pref. ...	105—110*	−2	...
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	90—95*	...	...
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	105—111*	...	...
160,000	,,	July 4	5	5	Cambridge 5 p.c. Deb. ...	117—122	...	119½—121½
100,000	10	Dec. 5	6	6	Cape Town, Ltd.	7½—8½	...	...
100,000	10	Nov. 7	4½	4½	Do. 4½ p.c. Pref. ...	6—7	...	...
150,000	Stk.	Dec. 19	4½	4½	Do. 4½ p.c. Deb. ...	88—93*	−2	...
626,860	,,	Aug. 8	6	6	Cardiff Con. Ord.	110—115	...	...
287,860	,,	July 4	5½	5	Do. 5 p.c. Red. Deb.	105—110	...	...
157,150	,,	Aug. 8	6½	6	Chester 5 p.c. Ord.	93—98[b]	...	...
98,986	1	Oct. 17	2/-	2/-	Colombo, Ltd. Ord.... ...	25/—30/-	...	...
609,204	1	Oct. 17	-/10'90	-/11'47	Colonial Gas Assn. Ltd. Ord.	16/—18/-	...	...
296,058	1	,,	1/2'54	1/3'30	Do. 8 p.c. Pref.	19/6—21/6	...	105—105½
1,822,505	Stk.	Aug. 8	5½	5	Commercial Ord.	110—115	+6	74
475,000	,,	Dec. 19	3	3	Do. 3 p.c. Deb. ...	73—78*	−1	...
240,744	,,	—	—	—	Do. 5 p.c. Deb. ...	117—122	...	...
807,565	,,	Aug. 8	7	7	Croydon sliding scale ...	139—144	...	...
469,590	,,	,,	5	5	Do. max. div.	95—100	...	...
500,000	,,	July 4	5	5	Do. 5 p.c. Deb.	120—125	...	...
542,270	,,	Aug. 8	10	7	Derby Con.	150—160[e]	...	...
55,000	,,	July 4	4	4	Do. 4 p.c. Deb.	75—85[e]	...	...
209,000	,,	Sept. 5	5	5	East Hull Ord. 5 p.c. ...	97—102	...	...
179,500	,,	Aug. 22	5½	6	East Surrey Ord. 5 p.c. ..	110—120	...	...
155,019	,,	Dec. 19	5	5	Do. 5 p.c. Deb. ..	116—121*	−2	...
1,002,180	,,	Sept. 19	†6½	†5	European, Ltd.	122—127	...	...
19,405,992	,,	Aug. 8	5½	5½	Gas Light & Coke 4 p.c. Ord.	24/6—25/6[f]	+/3	24/6—25/3
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	80—85	...	82½—82½
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	98—101	...	97½—99½
6,102,497	,,	Dec. 19	3	3	Do. 3 p.c. Con. Deb. ...	77—81*	−1	77½—78½
3,842,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	113—116*	−1	114½
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	107—111*	−1	108½—110½
264,011	,,	Aug. 22	—	6	Harrogate New Cons.	110—115	...	...
82,500	,,	Aug. 22	7	7	Hastings & St. L. 5 p.c. Conv	130—140	...	...
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	102—107	...	107
70,000	10	Oct. 17	†10	†10	Hongkong & China, Ltd. ...	9½—10½	...	...
218,200	Stk.	Aug. 22	6	6	Hornsey Con. 3½ p.c. ...	117—122	...	...
5,600,000	,,	Nov. 21	14	10	Imperial Continental Cap.	198—208	...	200½—204½
228,130	,,	Aug. 8	3½	3½	Do. 3½ p.c. Red. Deb.	90—95	...	91½—92½
335,342	,,	Aug. 8	8½	8½	Lea Bridge 5 p.c. Ord. ...	152—162	...	...
9,145,907	,,	Aug. 22	6	6	Liverpool 5 p.c. Ord. ...	119—120[b]	...	...
245,500	,,	June 20	5	5	Do. 5 p.c. Red. Pref. ...	100—110[b]	...	...
306,083	,,	July 15	4	4	Do. 4 p.c. Deb. ...	100—102	...	...
165,786	,,	Sept. 5	10	8	Maidstone 5 p.c. Cap. ...	160—170	...	...
56,176	,,	Dec. 19	3	3	Do. 3 p.c. Deb. ...	68—73*	−1	...
75,000	5	Dec. 5	†10	†10	Malta & Mediterranean	7½—8½	...	...
893,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	97—102	...	...
171,978	Stk.	Sept. 5	5	5	M. S. Utility "C." Cons. ...	100—110	...	...
718,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	90—95	...	90½
112,126	,,	July 4	4	4	Do. 4 p.c. Deb. ...	95—100	...	...
148,955	,,	,,	5	5	Do. 5 p.c. Deb. ...	115—120	...	...
675,000	,,	31 May '31	†6	†6	Montevideo, Ltd.	35—45	...	41
2,061,315	,,	Aug. 8	5½	5	Newcastle & Gateshead Con.	23/—24/-[d]	+/6	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	94—95[d]	+2½	...
691,705	,,	June 20	3½	3½	Do. 3½ p.c. Deb. ...	89—91[d]	...	...
377,285	,,	Nov. 7	5	5	Do. 5 p.c. Deb. '43...	103—107[d]	...	...
274,000	,,	Aug. 8	5	5	Newport (Mon.) 5 p.c. max.	93—95[a]	...	...
199,940	,,	Aug. 22	7½	7½	North Middlesex 6 p.c. Con.	135—145	...	144
396,160	,,	Aug. 8	5	5	Northampton 5 p.c. max. ...	96—101	...	...
300,000	,,	Dec. 5	7	9	Oriental, Ltd.	109—114	...	...
205,162	,,	Dec. 19	8	8	Plym'th & Stonehouse 5 p.c.	140—150*	−3	...
504,416	,,	Aug. 22	8	8	Portsm'th Con.Stk. 4 p.c.Std.	150—160	...	...
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	97—102	...	...
114,000	,,	Aug. 8	5	5	Preston 5 p.c. Pref.	105—110	...	...
686,312	,,	July 18	4	4	Primitiva 4 p.c. Rd. Db. 1911	77—82	...	...
389,813	,,	Dec. 19	4	4	Do. 4 p.c. Cons. Deb.	75—80*	−2	...
150,000	10	Sept. 19	6	6	San Paulo 6 p.c. Pref. ...	6½—7½	...	...
1,786,968	Stk.	Sept. 5	6	6	Sheffield Cons.	112—115[e]	...	...
95,000	,,	July 18	4	4	Do. 4 p.c. Deb.	92—96[e]	...	...
133,201	,,	Sept. 5	5	5½	Shrewsbury 5 p.c. Ord. ..	118—123	...	...
90,000	10	June 6	15	15	South African	4—6	...	...
6,709,895	Stk.	Aug. 8	7	5	South Met. Ord.	121—126	+1	121½—124
1,186,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	138—143	...	138½—140
1,895,445	,,	July 4	3	3	Do. 3 p.c. Deb. ...	78—82	...	...
1,009,000	,,	July 18	4	5	Do. 5 p.c. Red. Deb.	109—114	...	...
91,500	,,	Aug. 8	8½	8½	South Shields Con.	140—145[d]	...	...
1,543,795	,,	Aug. 8	6	6	South Suburban Ord. 5 p.c.	118—123	...	121½—122
300,000	,,	,,	5	5	Do. 5 p.c. Pref.	113—118	..	112½—114½
668,837	,,	Dec. 19	5	5	Do. 5 p.c. Deb.	117—122*	−3	119½—121
647,740	,,	Aug. 22	5	5	Southampt'n Ord. 5 p.c. max.	102—107	...	...
121,275	,,	Dec. 19	4	4	Do. 4 p.c. Deb.	95—100*	...	...
350,000	,,	Aug. 8	—	9/-	Swansea 5½ p.c. Red. Pref.	110—114	..	...
200,000	,,	Dec. 19	6½	6½	Do. 6½ p.c. Red. Deb.	163—168*	−2	164½
1,076,490	,,	Aug. 8	6½	6½	Tottenham and District Ord.	131—136	..	133½—135
300,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	120—125	...	...
199,005	,,	Dec. 19	4	4	Do. 4 p.c. Deb. ...	95—100*	...	...
85,701	,,	Sept. 19	6	6	Tuscan, Ltd., 6 p.c. Red. Db.	67—72	...	...
346,069	,,	Aug. 22	7	7	Uxbridge, &c., 5 p.ct. ...	130—140	...	...
88,380	,,	,,	5	5	Do. 5 p.c. Pref. ...	112—117	...	...
1,322,220	,,	July 4	7	7	Wandsworth Consolidated	137—142	...	138½—143
1,096,373	,,	,,	5	5	Do. 5 p.c. Pref.	113—118	..	115
1,317,964	,,	Dec. 19	5	5	Do. 5 p.c. Deb.	117—122*	−1	120—121½
158,400	,,	Aug. 22	5g	5	Winchester W.& G.5p.c.Con	107—112	...	111½

Quotations at :—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. *g* Paid £3, including 10s. on account of back dividends. * Ex. div. † Paid free of income-tax. ‡ For year.

(This announcement is inserted gratuitously.)

PETER—WITH ONE EXCEPTION

With one exception Peter is an ordinary little fellow. Chubby, likeable, just five-and-a-half, full of life and fun and on occasions—be it admitted—of naughtiness.

Just now Peter's rather important, for this is his first term at school, and he's grappling with the intricacies of "A B C" and "Twice Two": difficult subjects to all men of five-and-a half, but even more difficult in Peter's case because—bad luck—he's totally blind. That's his One Exception.

Peter learns reading, writing, and 'rithmetic through the medium of "Braille"—dull stuff compared with the coloured picture books of most five-and-a-halfs. However, he's a stout lad is Peter, and he's making great progress.

Would you like to know more about him? How, in spite of his "One Exception," he is being educated, and, when older, technically trained and usefully employed.

There is a long waiting list of "Peters" throughout the British Isles, for whom training and accommodation must be provided in the immediate future.

Will you help with a donation or annual subscription? Any sum, large or small, will be gratefully received.

Here's a suggestion. Your eyesight is worth 3d. a year to you. Send Peter and his handicapped pals 3d. for every year you've had it. Now, please, in case it slips your memory. Good idea!

THE CHAIRMAN,

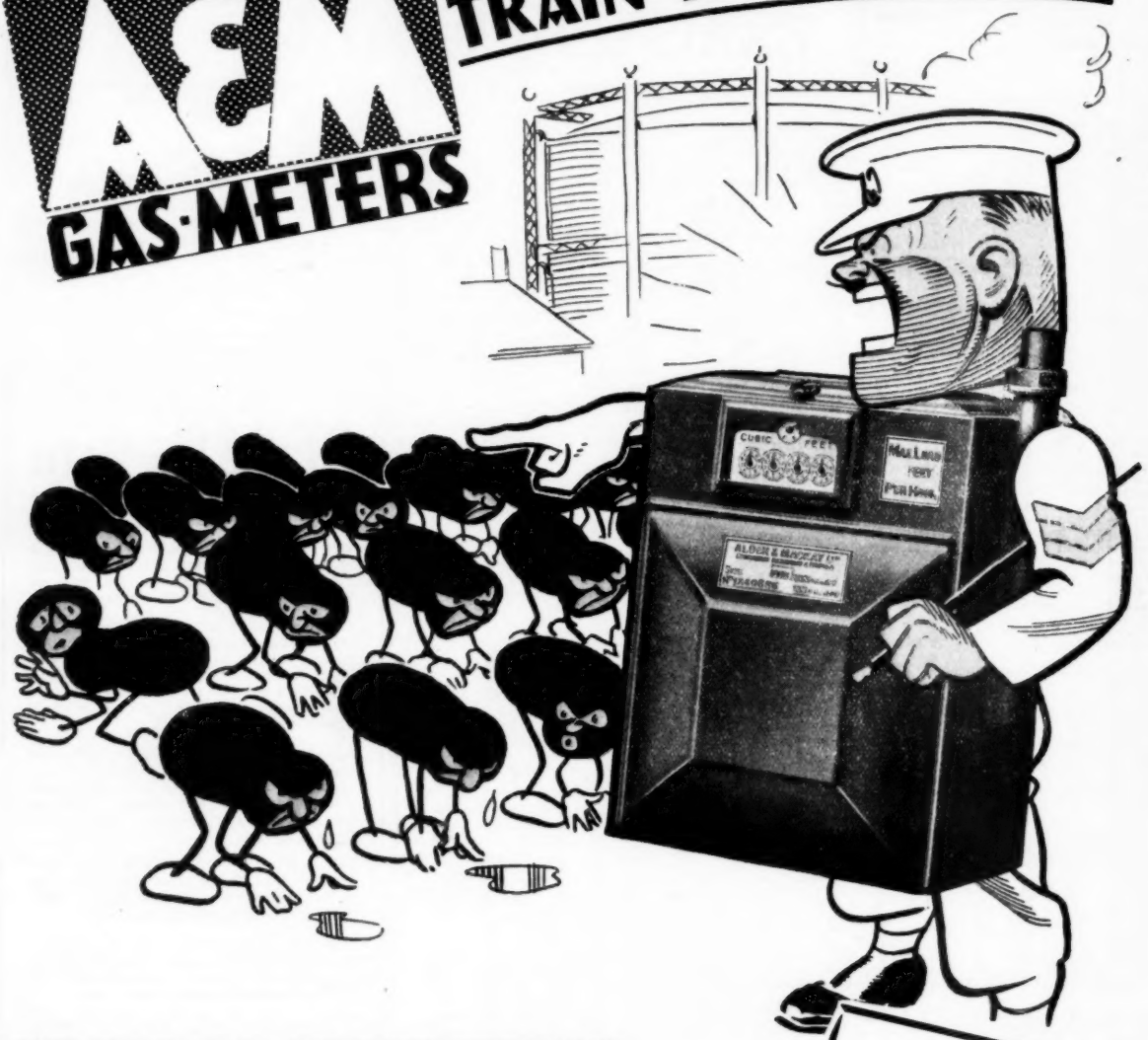
SCHOOL FOR THE BLIND

(Founded 1838).

Swiss Cottage, LONDON, N.W.3

A&M GAS·METERS

TRAIN·THE·THERMS



THE PARADE OF THE THERMS

One—Two—Three—Four ! Efficiency ! That is the motto of Sergt. A. E. M. Meters. He has absolute control over all his therms ; he knows them one by one and every job they do. He makes certain that every movement is checked up and paid for. He takes a perfect delight in spotting the slackers—they can't escape the eagle eye of Sergt. A. E. M. Meters. What about A. E. M. Meters for the control of your therms ?

ALDER & MACKAY LIMITED

MAKE METERS OF METICULOUS MEASUREMENT

The
ALDER & MACKAY
CLOCK
CONTROLLERS

are models of simplicity, accuracy and reliability—they definitely reduce lighting costs and improve the lighting service. If the necessary wave of pressure can be consistently sent to the furthest lamps in the district we advise the A. E. M. Pressure Wave Installation. If the wave cannot be guaranteed, then you cannot do better than instal A. E. M. Clock Controllers. There is a model for every kind of lamp.

ALDER & MACKAY LTD., EDINBURGH, LONDON & BRANCHES.